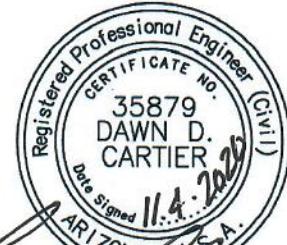




November 4, 2020

Mr. Richard Fazee
Five Star Development
6720 North Scottsdale Road, Suite 130
Scottsdale, Arizona 85253



A handwritten signature in black ink that reads "Dawn D. Cartier".

RE: Addendum to Traffic Impact and Mitigation Analysis for the Palmeraie Development – Paradise Valley, Arizona

Dear Mr. Fazee:

CivTech is pleased to present you with this Addendum to the Master Traffic Impact and Mitigation Analysis (TIMA) for the Palmeraie development located in the Town of Paradise Valley. A TIMA was previously completed and sealed on August 6, 2020 and represents a full buildout condition containing approximately 162,396 SF of retail space (LUC 820), 67,355 SF for food and beverage (LUC 932), 145,237 SF of office space (LUC 710), 41 multi-family dwelling units (LUC 221) and a 150-key hotel (LUC 310). Since submitting this TIMA to the City of Scottsdale, a change in the site plan has been proposed. The developer now proposed that 141 multi-family residential units be provided on the north half of the site instead of the previously proposed 41 multi-family dwelling units.

The purpose of this addendum is to determine if this change in site plan will affect any of the recommendations previously reported in the August 2020 TIMA. A new trip generation has been calculated and new capacity analysis and queue storage calculations have been conducted in order to determine if the previous recommendations may remain the same, or if additional changes to the site and surrounding roadway network are needed in order to accommodate the change in dwelling units.

TRIP GENERATION COMPARISON AND ASSIGNMENT

The potential trip generation for the proposed development was estimated utilizing the Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th Edition and Trip Generation Handbook, 3rd Edition. The ITE Trip Generation Manual contains data collected by various transportation professionals for a wide range of different land uses. The data are summarized in the report and average rates and equations have been established that correlate the relationship between an independent variable that describes the development size and generated trips for each categorized land use. The report provides information for daily and peak hour trips.

In the most recent TIMA, dated August 6, 2020, the development had proposed a full buildout of approximately 162,396 SF of retail space (LUC 820), 67,355 SF for food and beverage (LUC 932), 145,237 SF of office space (LUC 710), 41 multi-family dwelling units (LUC 221) and a 150-key hotel (LUC 310). In the new site plan, the Palmeraie development is proposing a change in residential units from 41 DU to 141 DU. This change will only affect the full buildout condition since Phase 1 of the development does not contain any residential units. **Table 1** summarized the change in trip generation for the full buildout condition of the Palmeraie development.

Table 1 – Trip Generation Comparison

Proposed Use	ITE LUC	Size Units	Weekday Trips									Saturday Trips		
			Daily		AM Peak Hour			PM Peak Hour			Mid-day Peak Hour			
			Total	In	Out	Total	In	Out	Total	In	Out	Total	In	Out
August 2020 TIMA – Phase 1 + Phase 2														
Retail	820	162.396 KSF	8,360	144	89	233	373	405	778	380	351	731		
Food & Beverage	932	67.355 KSF	7,556	369	301	670	408	250	658	385	369	754		
Office	710	145.237 KSF	1,524	140	23	163	26	136	162	42	35	77		
Apartments	221	41 DU	222	4	10	14	12	7	19	10	8	18		
Hotel	310	150 Rooms	1,266	41	29	70	44	42	86	60	48	108		
		Subtotals	18,928	698	452	1,150	863	840	1,703	877	811	1,688		
		<i>Internal Capture Reduction (20%)</i>	(3,488)	(131)	(83)	(214)	(162)	(158)	(320)	(194)	(181)	(375)		
		External Trips	15,440	567	369	936	701	682	1,383	702	648	1,350		
October 2020 TIMA Addendum – Phase 1 + Phase 2														
Retail	820	162.396 KSF	8,360	144	89	233	373	405	778	380	351	731		
Food & Beverage	932	67.355 KSF	7,556	369	301	670	408	250	658	385	369	754		
Office	710	145.237 KSF	1,524	140	23	163	26	136	162	42	35	77		
Apartments	221	141 DU	766	12	36	48	38	24	62	33	29	62		
Hotel	310	150 Rooms	1,266	41	29	70	44	42	86	60	48	108		
		Subtotals	19,472	706	478	1,184	889	857	1,746	900	832	1,732		
		<i>Internal Capture Reduction</i>	(3,876)	(145)	(93)	(238)	(180)	(176)	(356)	(200)	(184)	(384)		
		Total External Vehicle Trips	15,984	575	395	970	727	699	1,426	720	666	1,386		
		<i>Difference In Trips</i>	+544	+8	+26	+34	+26	+17	+43	+18	+18	+36		

As summarized in **Table 1**, the previous site plan proposed by the Palmeraie development was anticipated to generate approximately 15,440 weekday daily trips with 936 trips occurring during the AM peak hour (567 in/369 out), 1,383 trips occurring during the PM peak hour (701 in/682 out), and 1,350 trips occurring during the Saturday peak hour (702 in/648 out).

With the new site plan proposed by the Palmeraie development, the site is anticipated to generate 15,984 weekday daily trips with 970 trips occurring during the AM peak hour (575 in/395 out), 1,426 trips occurring during the PM peak hour (727 in/699 out), and

1,386 trips occurring during the Saturday peak hour (720 in/666 out). This change in site plan is anticipated to generate 544 additional weekday daily trips with 26 additional trips occurring during the AM peak hour, 43 additional trips occurring during the PM peak hour and 36 additional trips occurring during the Saturday peak hour.

These new trips were assigned to the roadway network using the same trip distribution as presented in the August 2020 TIMA. The trip distribution from the August 2020 TIMA is summarized in **Table 2**.

Table 2 – Trip Distribution Percentages

Roadway	To/From	Trip Distribution			
		Residential	Retail	Office	Hotel
Scottsdale Road	North	13%	29%	22%	15%
Scottsdale Road	South	30%	35%	32%	25%
Mockingbird Lane	North	2%	2%	2%	0%
Mockingbird Lane	South	0%	2%	2%	0%
Indian Bend Road	East	29%	16%	20%	15%
Lincoln Drive	East	0%	2%	0%	0%
Lincoln Drive	West	26%	14%	22%	45%
Total		100%	100%	100%	100%

The resulting site generated volumes utilizing the new proposed trip generation and the original trip distribution is included in an **Attachment**. The background traffic volumes from the August 2020 TIMA as well as the updated total volumes for the 2023 full buildout year are also included in an **Attachment**.

CAPACITY ANALYSIS

Peak hour capacity analysis has been conducted using the new total traffic volumes for the AM, PM and Saturday peak hours. All intersections have been analyzed using Synchro 11 software and HCM 6th edition methodology with the exception of Scottsdale Road and Lincoln Drive. Due to the abnormal phasing present at this intersection, HCM 2000 methodology was used to analyze the levels of service at this intersection. Results of the 2023 total traffic analysis are included in **Table 3**. Turning movements at the intersection of Scottsdale Road and 6750 North have not been affected by the change in site generated trips, therefore it has not been included in the updated analysis. Synchro worksheets for each of the peak hours for the 2023 buildout year are included in an **Attachment**.

Table 3 – Peak Hour Levels of Service

ID	Intersection	Control	Movement	2023 LOS	
				Full-Build	Mitigated
				AM(PM)[Sat]	AM(PM)[Sat]
3	Scottsdale Plaza Resort Driveway & Indian Bend Rd.	Roundabout	NB	A(A)[A]	[Not Mitigated]
			SB	A(A)[A]	
4	Scottsdale Rd. & Indian Bend Rd.	Signalized	EB	A(A)[A]	[Not Mitigated]
			WB	A(A)[A]	
4	Scottsdale Rd. & Indian Bend Rd.	Signalized	Overall	A(A)[A]	[Not Mitigated]
			NB left	D(D)[C]	
			NB thru	A(B)[C]	
			NB right	A(A)[B]	
			SB left	D(D)[C]	
			SB thru	D(C)[C]	
			SB right	B(B)[C]	
			EB left	E(E)[D]	
			EB thru	F(F)[F]	
			EB right	F(F)[F]	
			WB left	E(E)[D]	
			WB thru	D(F)[D]	
			WB right	B(B)[B]	
5	Scottsdale Rd. & Joshua Tree Ln.	1-way stop (WB)	Overall	C(D)[D]	D(D)[D]
			SB left	D(F)[F]	[Not Mitigated]
10	Quail Run Rd. & Lincoln Dr.	Signalized	WB shared	F(F)[F]	
			NB left	D(D)[A]	[Not Mitigated]
			NB thru	A(A)[A]	
			NB right	A(A)[A]	
			SB left	D(D)[B]	
			SB thru	A(A)[A]	
			SB right	E(E)[B]	
			EB left	B(B)[B]	
			EB thru	A(A)[A]	
			EB right	A(A)[A]	
			WB left	A(A)[A]	
			WB thru	B(B)[B]	
			WB right	A(A)[B]	
11	Scottsdale Rd. & Lincoln Dr.	Signalized	Overall	B(B)[B]	[Not Mitigated]
			NB left	E(D)[D]	
11	Scottsdale Rd. & Lincoln Dr.	Signalized	NB thru	C(D)[C]	[Not Mitigated]
			NB right	C(D)[C]	
			SB left	E(F)[E]	
			SB thru	E(F)[F]	
			SB right	D(A)[E]	
			EB left	F(E)[D]	
			EB thru	E(D)[D]	
			EB right	C(C)[C]	
			WB left	E(D)[D]	
			WB thru	D(D)[D]	
			WB right	D(D)[D]	
			Overall	D(E)[E]	D(E)[D]
16	Scottsdale Rd. & Tuckey Ln.	1-way stop (WB)	SB left	E(F)[F]	[Not Mitigated]
			WB shared	F(F)[F]	
A	Palmerae Drive & Indian Bend Rd.	1-way stop (NB)	NB left	B(B)[B]	[Not Mitigated]
			NB right	A(A)[A]	
			WB left	A(A)[A]	
B	Scottsdale Rd. & Street B	1-way stop (EB)	EB right	D(F)[B]	[Not Mitigated]
			NB shared	B(B)[B]	
L	6750 North/Spectrum Drive & Street C	2-way stop (NB/SB)	SB shared	B(C)[D]	[Not Mitigated]
			EB left	A(A)[A]	
			WB left	A(A)[A]	
			Overall	A(A)[A]	
21	RIRO Access & Indian Bend Rd.	1-way stop (NB)	NB Right	A(A)[A]	[Not Mitigated]

As summarized in **Table 3**, the slight increase in site generated traffic from the August 2020 TIMA result in generally the same levels of service, delay and recommended mitigation.

Although the volumes at the intersection of Scottsdale Road and 6750 North did not change with the increase in multi-family dwelling units. The eastbound approach configuration is proposed to change from dual left turn lanes and dual right turn lanes to dual left turn lanes and a single right turn lane. The levels of service for this intersection are included in **Table 4**.

Table 4 – Peak Hour Levels of Service at Scottsdale Rd and 6750 North

ID	Intersection	Control	Movement	2023 LOS		
				Full-Build		
				AM(PM)[Sat]		
6	Scottsdale Road and 6750 North	Signal	NB left NB thru SB thru SB right EB left EB right	C(D)[C] A(A)[A] B(C)[A] A(B)[A] E(E)[D] C(D)[C]		
			Overall	A(B)[A]		

As summarized in **Table 4**, the level of service without the second right turn lane is better than what was reported in the August 2020 TIA. Based on the results, mitigation to this intersection is not recommended beyond the addition of a second eastbound left turn lane. The need for a second northbound left turn lane can be monitored alongside the development of the Palmeraie site and as future traffic patterns evolve.

QUEUE STORAGE ANALYSIS

Adequate turn storage should be provided at all existing and proposed turn lanes affected by site generated traffic. For the purpose of this analysis, since the intersection of Scottsdale Road and 6750 North has not been affected by the change in trip generation or site generated traffic, the recommendations from the August 2020 TIMA will remain the same. The remaining intersection queue length recommendations are summarized in **Table 5** using the HCM 95th percentile. The HCM 95th percentile queue storage lengths are included in an **Attachment**.

Table 5 – Queue Storage Length Summary

ID	Intersection	Control	Turn Lane	Existing Storage ⁽¹⁾	HCM 95 th %-ile	Recommended Storage
4	Scottsdale Road & Indian Bend Road	Signalized	NB left	235'	300'	⁽²⁾⁽⁴⁾ 470'
			NB right	215'	285'	215'
			SB left ⁽²⁾	400'	185'	⁽⁴⁾ 400'
			SB Right	-	90'	⁽⁹⁾ 165'
			EB left	95'	145'	⁽³⁾⁽⁶⁾ 145'
			WB left	525'	295'	⁽⁴⁾ 525'
			WB right	265'	140'	⁽⁴⁾ 265'
5	Scottsdale Road & Joshua Tree Lane	1-Way Stop (WB)	SB left ⁽²⁾	150'	<25'	⁽⁴⁾ 150'
11	Scottsdale Road & Lincoln Drive	Signalized	NB left ⁽²⁾	470'	230'	⁽⁴⁾ 470'
			SB left	185'	85'	⁽⁴⁾ 185'
			SB right	160'	445'	⁽⁵⁾⁽⁸⁾ 160'
			EB left ⁽²⁾	180' ⁽⁸⁾	525'	⁽⁵⁾⁽⁸⁾ 180'
			EB right	180'	220'	⁽⁷⁾ 180'
			WB left	90'	75'	⁽⁴⁾ 90'
16	Scottsdale Road & Tuckey Lane	1-Way Stop (WB)	SB left	125'	<25'	⁽⁴⁾ 125'
A	Palmeraie Drive & Indian Bend Road	1-way Stop (NB)	NB Left	90'	<25'	⁽⁴⁾ 90'
B	Scottsdale Road & Street B	1-Way Stop (EB)	SB right	---	<25	^{(3) (6)} 100'
			EB right	---	90'	^{(3) (6)} 100'
L	Street C & 6750 North	1-Way Stop (NB/SB)	EB left	---	<25	^{(3) (6)} 100'
			WB left	---	<25	^{(3) (6)} 100'

- (1) Striped length from stop bar, measured using aerial photographs, rounded to the nearest 5-feet.
- (2) Dual turn lanes. Values presented represent total combined length of both lanes
- (3) Maximum queue length is set at 350' for signalized intersections. Scottsdale standards indicate right turn lanes on arterial roads and deceleration lanes should provide a minimum striped length of 100' with a preferred length of 150'.
- (4) Existing queue storage provides sufficient space for future volumes.
- (5) Existing queue storage is less than predicted demand; however, mitigation is not recommended as part of the project.
- (6) Recommend constructing/extending turn lane to this length if possible.
- (7) Turn lane cannot be extended due to prior turn lane or driveway.
- (8) One or more turn lane is formed from a travel lane. Additional storage is available in this lane.
- (9) Measurement based off Scottsdale road Pavement Marking and Signing Plan as part of Ritz Carlton Master Plan set

As summarized in **Table 5**, all queue length recommendations are consistent with the recommendations presented in the August 2020 TIMA. All recommended turn lane lengths and additional turn lanes from the original TIMA are still valid with the increase in residential dwelling units.

Since the lane configuration for the eastbound approach at the intersection of Scottsdale Road and 6750 North has been proposed to change from the previous version of the TIA and the volumes remain the same, a queue storage analysis will still be conducted at this location. The summary of the queue storage lengths for this intersection are included in **Table 6**.

Table 6 – Queue Storage Length Summary for Scottsdale Rd and 6750 North

ID	Intersection	Control	Turn Lane	Existing Storage ⁽¹⁾	HCM 95 th % ile	Recommended Storage
6	Scottsdale Road & 6750 North	Signalized	NB left SB right EB left EB right	100' 100' 55' 55'	95' 55' 105' 210'	⁽⁶⁾ 100' ⁽⁴⁾ 100' ⁽²⁾ ⁽⁶⁾ 110' ⁽⁶⁾ 210'

(1) Striped length from stop bar, measured using aerial photographs, rounded to the nearest 5-feet.

(2) Dual turn lanes. Values presented represent total combined length of both lanes

(3) Maximum queue length is set at 350' for signalized intersections. Scottsdale standards indicate right turn lanes on arterial roads and deceleration lanes should provide a minimum striped length of 100' with a preferred length of 150'.

(4) Existing queue storage provides sufficient space for future volumes.

(5) Existing queue storage is less than predicted demand; however, mitigation is not recommended as part of the project.

(6) Recommend constructing/extending turn lane to this length if possible.

(7) Turn lane cannot be extended due to prior turn lane or driveway.

(8) One or more turn lane is formed from a travel lane. Additional storage is available in this lane.

(9) Measurement based off Scottsdale road Pavement Marking and Signing Plan as part of Ritz Carlton Master Plan set

The northbound left turn lane at the intersection of Scottsdale Road and 6750 North is currently constructed at 100 feet. HCM 95th percentile suggests only 95 feet of queue storage is needed to accommodate all of the northbound left turning vehicles during any of the peak hours. It is recommended that the turn lane remain as-is for now, but be re-evaluated as development happens for the Palmeraie site.

CONCLUSIONS

The following conclusions can be made based on the findings in this addendum:

- The previous site plan proposed by the Palmeraie development was anticipated to generate approximately 15,440 weekday daily trips with 936 trips occurring during the AM peak hour (567 in/369 out), 1,383 trips occurring during the PM peak hour (701 in/682 out), and 1,350 trips occurring during the Saturday peak hour (702 in/648 out).
 - With the new site plan proposed by the Palmeraie development, the site is anticipated to generate 15,984 weekday daily trips with 970 trips occurring during the AM peak hour (575 in/395 out), 1,426 trips occurring during the PM peak hour (727 in/699 out), and 1,386 trips occurring during the Saturday peak hour (720 in/666 out).
 - This change in site plan is anticipated to generate 544 additional weekday daily trips with 26 additional trips occurring during the AM peak hour, 43 additional trips occurring during the PM peak hour and 36 additional trips occurring during the Saturday peak hour.

- As summarized in **Table 3**, the slight increase in site generated traffic from the August 2020 TIMA result in generally the same levels of service, delay and recommended mitigation.
 - As summarized in **Table 4**, the level of service at the intersection of Scottsdale Road and 6750 North without the second right turn lane is better than what was reported in the August 2020 TIA. Based on the results, mitigation to this intersection is not recommended beyond the addition of a second eastbound left turn lane. The need for a second northbound left turn lane can be monitored alongside the development of the Palmeraie site and as future traffic patterns evolve.
- As summarized in **Table 5**, all queue length recommendations are consistent with the recommendations presented in the August 2020 TIMA. All recommended turn lane lengths and additional turn lanes from the original TIMA are still valid with the increase in residential dwelling units.
 - The northbound left turn lane at the intersection of Scottsdale Road and 6750 North is currently constructed at 100 feet. HCM 95th percentile suggests only 95 feet of queue storage is needed to accommodate all of the northbound left turning vehicles during any of the peak hours. It is recommended that the turn lane remain as-is for now, but be re-evaluated as development happens for the Palmeraie site.

Thank you for allowing CivTech to assist you on this project. Please contact me with any questions you may have on this statement.

Sincerely,

Dawn Cartier, P.E., PTOE
Principle/President

Attachments:

Previous and New Trip Generations
2023 Traffic Volumes
2023 Full Build Capacity Analysis
HCM 95th Percentile Queue Lengths

Palmerae

Phase 1 + Phase 2

Trip Generation

July 2020

Appendix D

Methodology Overview

This form facilitates trip generation estimation using data within the Institute of Transportation Engineer's (ITE) *Trip Generation Manual*, 10th Edition and methodology described within ITE's *Trip Generation Handbook*, 3rd Edition. These references will be referred to as *Manual* and *Handbook*, respectively. The *Manual* contains data collected by various transportation professionals for a wide range of different land uses, with each land use category represented by a land use code (LUC). Average rates and equations have been established that correlate the relationship between an independent variable that describes the development size and generated trips for each categorized LUC in various settings and time periods. The *Handbook* indicates an established methodology for how to use data contained within the *Manual* when to use the fitted curve instead of the average rate and when to adjustments to the volume of trips are appropriate and how to do so. The methodology steps are represented visually in boxes in Figure 3.1. This worksheet applies calculations for each box if applicable.

Box 1 - Define Study Site Land Use Type & Site Characteristics

The analyst is to pick an appropriate LUC(s) based on the subject's zoning/land use(s)/future land use(s). The size of the land use(s) is described in reference to an independent variable(s) specific to (each) the land use (example: 1,000 square feet of building area is relatively common).

Land Use Types and Size

Proposed Use	Amount Units	ITE LUC	ITE Land Use Name
Retail	162,396 1,000 square feet	820	Shopping Center
Food & Beverage	67,355 1,000 square feet	932	High Turnover(Sit Down) Restaurant
Office	145,237 1,000 square feet	710	General Office Building
Apartments	41 Dwelling Units	221	Multifamily Housing (Mid-Rise)
Hotel	150 Rooms	310	Hotel

Baseline Vehicular Trips

Proposed Use	ADT				AM Peak Hour				PM Peak Hour				Saturday			
	% In	In	Out	Total	% In	In	Out	Total	% In	In	Out	Total	% In	In	Out	Total
Retail	50%	4,180	4,180	8,360	62%	144	89	233	48%	373	405	778	52%	380	351	731
Food & Beverage	50%	3,778	3,778	7,556	55%	369	301	670	62%	408	250	658	51%	385	369	754
Office	50%	762	762	1,524	86%	140	23	163	16%	26	136	162	54%	42	35	77
Apartments	50%	111	111	222	26%	4	10	14	61%	12	7	19	54%	10	8	18
Hotel	50%	633	633	1,266	59%	41	29	70	51%	44	42	86	56%	60	48	108
Totals		9,464	9,464	18,928		698	452	1,150		863	840	1,703		877	811	1,688

Adjustments for Internal Trips

Proposed Use	ADT				AM Peak Hour				PM Peak Hour				Saturday			
	Percent	In	Out	Total	Percent	In	Out	Total	Percent	In	Out	Total	Percent	In	Out	Total
Retail	20%	836	836	1,672	20%	29	18	47	20%	75	81	156	20%	76	70	146
Food & Beverage	20%	756	756	1,512	20%	74	60	134	20%	82	50	132	20%	77	74	151
Office	20%	152	152	304	20%	28	5	33	20%	5	27	32	20%	8	7	15
Apartments	0%	0	0	0	0%	0	0	0	0%	0	0	0	20%	2	2	4
Hotel	0%	0	0	0	0%	0	0	0	0%	0	0	0	20%	12	10	22
Totals		1,744	1,744	3,488		131	83	214		162	158	320	20%	175	163	338

External Vehicular Trips

Proposed Use	ADT			AM Peak Hour			PM Peak Hour			Saturday		
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total
Retail	3,344	3,344	6,688	115	71	186	298	324	622	304	281	585
Food & Beverage	3,022	3,022	6,044	295	241	536	326	200	526	308	295	603
Office	610	610	1,220	112	18	130	21	109	130	34	28	62
Apartments	111	111	222	4	10	14	12	7	19	8	6	14
Hotel	633	633	1,266	41	29	70	44	42	86	48	38	86
Totals	7,720	7,720	15,440	567	369	936	701	682	1,383	702	648	1,350

Palmerae Addendum

Phase 1 + Phase 2

Trip Generation

October 2020

Appendix D

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The analyst is to pick an appropriate LUC(s) based on the subject's zoning/land use(s)/future land use(s). The size of the land use(s) is described in reference to an independent variable(s) specific to (each) the land use (example: 1,000 square feet of building area is relatively common).

Land Use Types and Size

Proposed Use	Amount Units	ITE LUC	ITE Land Use Name
Retail	162,396 1,000 square feet	820	Shopping Center
Food & Beverage	67,355 1,000 square feet	932	High Turnover(Sit Down) Restaurant
Office	145,237 1,000 square feet	710	General Office Building
Apartments	141 Dwelling Units	221	Multifamily Housing (Mid-Rise)
Hotel	150 Rooms	310	Hotel

Baseline Vehicular Trips

Proposed Use	ADT				AM Peak Hour				PM Peak Hour				Saturday			
	% In	In	Out	Total	% In	In	Out	Total	% In	In	Out	Total	% In	In	Out	Total
Retail	50%	4,180	4,180	8,360	62%	144	89	233	48%	373	405	778	52%	380	351	731
Food & Beverage	50%	3,778	3,778	7,556	55%	369	301	670	62%	408	250	658	51%	385	369	754
Office	50%	762	762	1,524	86%	140	23	163	16%	26	136	162	54%	42	35	77
Apartments	50%	383	383	766	26%	12	36	48	61%	38	24	62	54%	33	29	62
Hotel	50%	633	633	1,266	59%	41	29	70	51%	44	42	86	56%	60	48	108
Totals		9,736	9,736	19,472		706	478	1,184		889	857	1,746		900	832	1,732

Adjustments for Internal Trips

Proposed Use	ADT				AM Peak Hour				PM Peak Hour				Saturday			
	Percent	In	Out	Total	Percent	In	Out	Total	Percent	In	Out	Total	Percent	In	Out	Total
Retail	20%	836	836	1,672	20%	29	18	47	20%	75	81	156	20%	76	70	146
Food & Beverage	20%	756	756	1,512	20%	74	60	134	20%	82	50	132	20%	77	74	151
Office	20%	152	152	304	20%	28	5	33	20%	5	27	32	20%	8	7	15
Apartments	0%	0	0	0	0%	0	0	0	0%	0	0	0	20%	7	5	12
Hotel	0%	0	0	0	0%	0	0	0	0%	0	0	0	20%	12	10	22
Totals		1,744	1,744	3,488		131	83	214		162	158	320	20%	180	166	346

External Vehicular Trips

Proposed Use	ADT			AM Peak Hour			PM Peak Hour			Saturday		
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total
Retail	3,344	3,344	6,688	115	71	186	298	324	622	304	281	585
Food & Beverage	3,022	3,022	6,044	295	241	536	326	200	526	308	295	603
Office	610	610	1,220	112	18	130	21	109	130	34	28	62
Apartments	383	383	766	12	36	48	38	24	62	26	24	50
Hotel	633	633	1,266	41	29	70	44	42	86	48	38	86
Totals	7,992	7,992	15,984	575	395	970	727	699	1,426	720	666	1,386

Figure 9 - Site Volumes (october 2020)

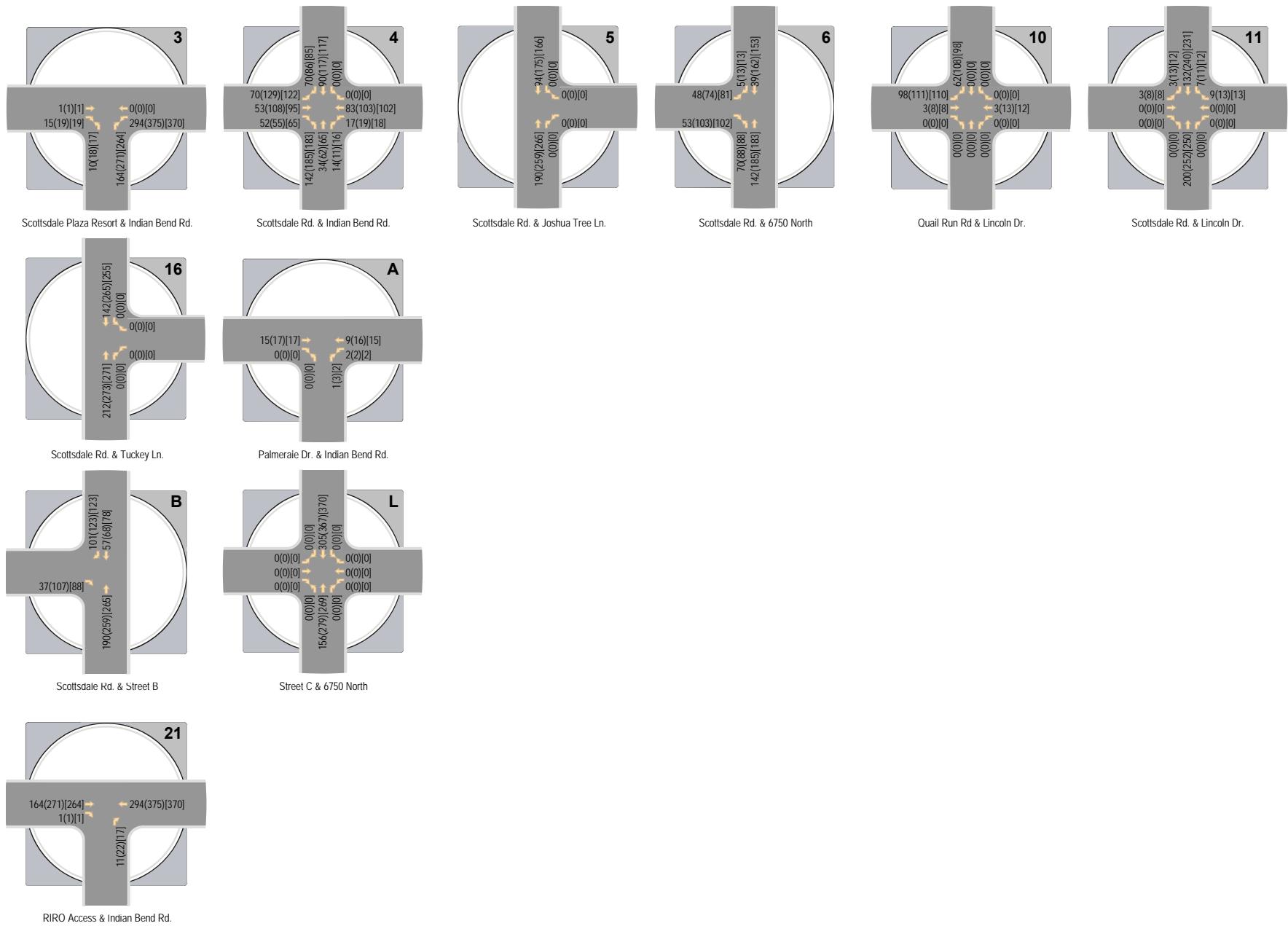
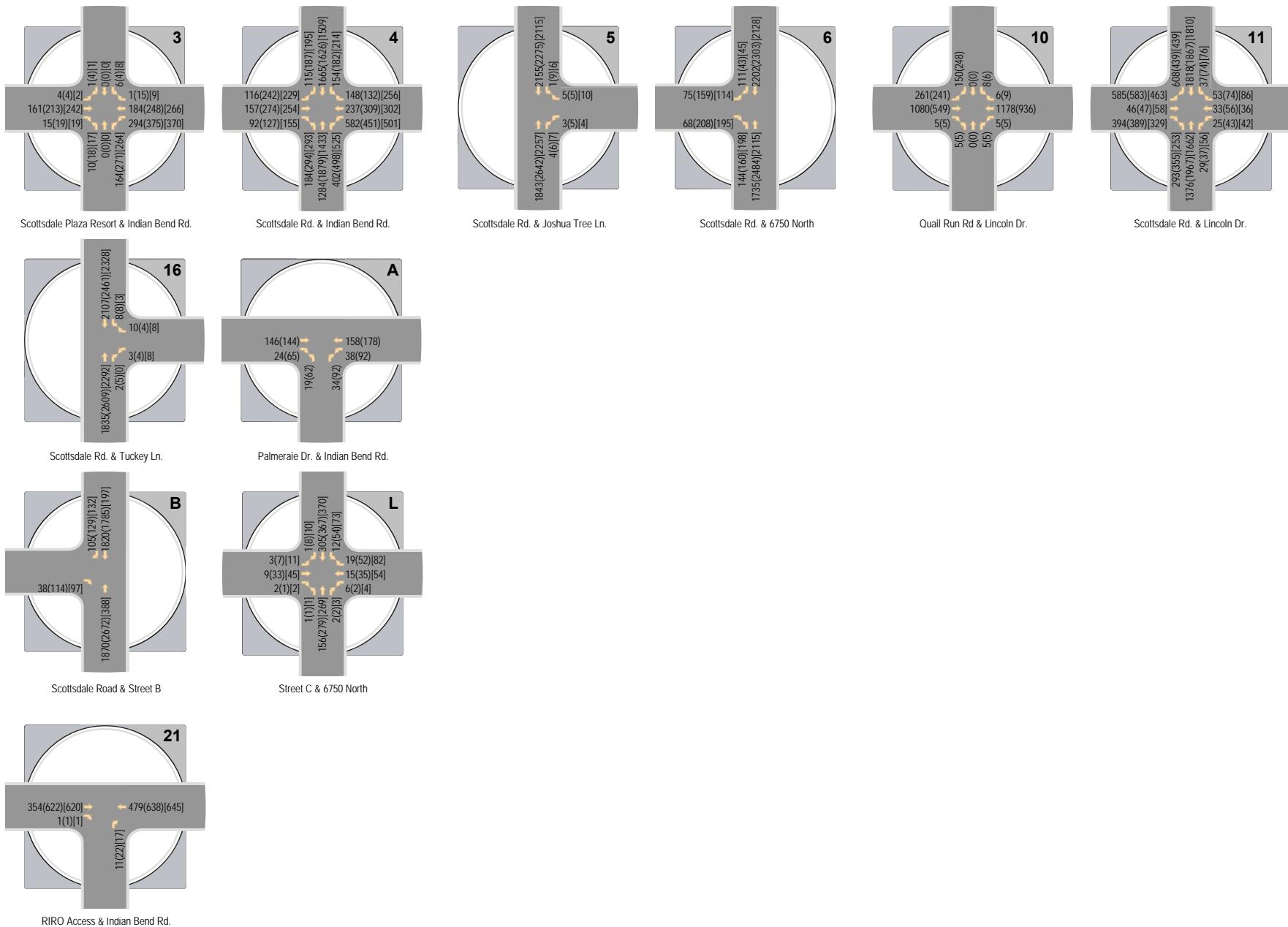


Figure 11 - 2023 Total Volumes



HCM 6th Roundabout
3: Indian Bend Rd. & Scottsdale Plaza Resort

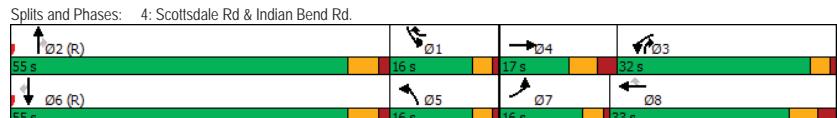
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Intersection				
Intersection Delay, s/veh	5.9			
Intersection LOS	A			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	195	521	189	8
Demand Flow Rate, veh/h	198	531	193	8
Vehicles Circulating, veh/h	333	15	189	541
Vehicles Exiting, veh/h	216	367	342	5
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	5.7	6.4	4.7	4.6
Approach LOS	A	A	A	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	198	531	193	8
Cap Entry Lane, veh/h	983	1359	1138	795
Entry HV Adj Factor	0.982	0.981	0.979	1.000
Flow Entry, veh/h	195	521	189	8
Cap Entry, veh/h	965	1333	1114	795
V/C Ratio	0.202	0.391	0.170	0.010
Control Delay, s/veh	5.7	6.4	4.7	4.6
LOS	A	A	A	A
95th %tile Queue, veh	1	2	1	0

Timings
4: Scottsdale Rd & Indian Bend Rd.

11/04/2020

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑↓	↑↓	↑↓	↑	↑	↑↓	↑↓	↑	↑↓	↑↓	↑
Traffic Volume (vph)	116	157	582	237	148	184	1284	402	154	1665	115
Future Volume (vph)	116	157	582	237	148	184	1284	402	154	1665	115
Turn Type	Prot	NA	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	Perm
Protected Phases	7	4	3	8	1	5	2	3	1	6	6
Permitted Phases					8				2		6
Detector Phase	7	4	3	8	1	5	2	3	1	6	6
Switch Phase											
Minimum Initial (s)	4.0	6.0	4.0	6.0	4.0	4.0	20.0	4.0	4.0	20.0	20.0
Minimum Split (s)	8.5	13.0	8.5	13.0	9.4	8.5	29.4	8.5	9.4	29.4	29.4
Total Split (s)	16.0	17.0	32.0	33.0	16.0	16.0	55.0	32.0	16.0	55.0	55.0
Total Split (%)	13.3%	14.2%	26.7%	27.5%	13.3%	13.3%	45.8%	26.7%	13.3%	45.8%	45.8%
Yellow Time (s)	3.0	4.2	3.0	4.2	3.0	3.0	4.4	3.0	3.0	4.4	4.4
All-Red Time (s)	1.0	2.8	1.0	2.8	1.0	1.0	1.6	1.0	1.0	1.6	1.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.0	4.0	7.0	4.0	4.0	6.0	4.0	4.0	6.0	6.0
Lead/Lag	Lead	Lead	Lag	Lag	Lag	Lag	Lead	Lag	Lag	Lead	Lead
Lead-Lag Optimize?	Yes										
Recall Mode	None	None	None	None	None	None	C-Max	None	None	C-Max	C-Max
Act Effct Green (s)	7.8	9.4	25.1	26.7	39.7	10.0	54.4	85.6	10.0	54.4	54.4
Actuated g/C Ratio	0.06	0.08	0.21	0.22	0.33	0.08	0.45	0.71	0.08	0.45	0.45
v/c Ratio	0.57	0.82	0.88	0.62	0.28	0.70	0.61	0.38	0.58	0.78	0.16
Control Delay	64.0	58.7	60.4	49.1	12.3	60.9	11.4	1.2	61.0	31.9	6.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.0	58.7	60.4	49.1	12.3	60.9	11.4	1.2	61.0	31.9	6.0
LOS	E	E	E	D	B	E	B	A	E	C	A
Approach Delay		60.4		50.3			14.1			32.7	
Approach LOS		E		D		B			C		
Intersection Summary											
Cycle Length: 120											
Actuated Cycle Length: 120											
Offset: 30 (25%), Referenced to phase 2:NBT and 6:SBT, Start of Green											
Natural Cycle: 90											
Control Type: Actuated-Coordinated											
Maximum v/c Ratio: 0.88											
Intersection Signal Delay: 31.2											
Intersection LOS: C											
Intersection Capacity Utilization 78.8%											
ICU Level of Service D											
Analysis Period (min) 15											
Splits and Phases: 4: Scottsdale Rd & Indian Bend Rd.											



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HCM 6th Signalized Intersection Summary

4: Scottsdale Rd & Indian Bend Rd.

11/04/2020

Movement	EBL	EBT	EBC	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑↑	↑↑		↑↑	↑↑	↑↑	↑↑	↑↑↑↑	↑↑	↑↑↑↑	↑↑↑↑	↑↑
Traffic Volume (veh/h)	116	157	92	582	237	148	184	1284	402	154	1665	115
Future Volume (veh/h)	116	157	92	582	237	148	184	1284	402	154	1665	115
Initial Q (Q _b), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A _{pbT})	1.00	1.00	1.00		1.00	1.00			1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No		No		No		No		No	
Adj Sat Flow, veh/h/in	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	126	171	100	633	258	161	200	1396	437	167	1810	125
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	180	184	102	692	480	578	374	2085	964	374	2085	647
Arrive On Green	0.05	0.08	0.08	0.20	0.26	0.26	0.22	0.82	0.82	0.11	0.41	0.41
Sat Flow, veh/h	3456	2203	1224	3456	1870	1585	3456	5106	1585	3456	5106	1585
Grp Volume(v), veh/h	126	136	135	633	258	161	200	1396	437	167	1810	125
Grp Sat Flow(s), veh/h/in	1728	1777	1650	1728	1585	1728	1702	1585	1728	1702	1585	
O Serve(g _s), s	4.3	9.1	9.8	21.5	14.3	1.2	6.2	13.3	0.0	5.4	39.0	4.7
Cyc/Q Clear(g _c), s	4.3	9.1	9.8	21.5	14.3	1.2	6.2	13.3	0.0	5.4	39.0	4.7
Prop In Lane	1.00		0.74	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	180	148	137	692	480	578	374	2085	964	374	2085	647
V/C Ratio(X)	0.70	0.92	0.98	0.92	0.54	0.28	0.53	0.67	0.45	0.45	0.87	0.19
Avail Cap(c _a), veh/h	346	148	137	806	480	578	374	2085	964	374	2085	647
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	56.0	54.6	54.9	47.0	38.5	14.5	44.3	7.7	3.1	50.1	32.5	13.6
Incr Delay (d ₂), s/veh	1.8	50.0	70.3	12.7	0.7	0.1	0.8	1.7	1.5	0.3	5.2	0.7
Initial O Delay(d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOf(95%), veh/in	3.5	10.2	11.0	15.7	10.9	4.0	4.5	5.4	3.4	4.3	23.4	4.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	57.8	104.6	125.2	59.7	39.1	14.6	45.1	9.5	4.7	50.5	37.8	14.2
LnGrp LOS	E	F	F	E	D	B	D	A	A	D	D	B
Approach Vol, veh/h	397			1052			2033			2102		
Approach Delay, s/veh	96.7			47.8			11.9			37.4		
Approach LOS	F			D			B			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+R _c), s	17.0	55.0	31.0	17.0	17.0	55.0	10.2	37.8				
Change Period (Y+R _c), s	* 4	6.0	* 7	* 7	* 4	6.0	4.0	* 7				
Max Green Setting (G _{max}), s	* 12	49.0	* 28	* 10	* 12	49.0	12.0	* 26				
Max O Clear Time (g _{c+11}), s	7.4	15.3	23.5	11.8	8.2	41.0	6.3	16.3				
Green Ext Time (p _c), s	0.0	2.3	0.5	0.0	0.1	2.7	0.0	0.9				
Intersection Summary												
HCM 6th Ctrl Delay				34.3								
HCM 6th LOS				C								
Notes												
User approved pedestrian interval to be less than phase max green.												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

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HCM 6th TWSC

5: Scottsdale Rd & Joshua Tree Ln

11/04/2020

Intersection					
Int Delay, s/veh					
WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↑↑	↑↑↑↑	4	↑↑↑↑	
Traffic Vol, veh/h	3	5	1843	4	1 2155
Future Vol, veh/h	3	5	1843	4	1 2155
Conflicting Peds, #/hr	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free
RT Channelized	-	None	-	None	-
Storage Length	0	-	-	-	150
Veh in Median Storage, #	0	-	0	-	0
Grade, %	0	-	0	-	0
Peak Hour Factor	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2
Mvmt Flow	3	5	2003	4	1 2342
Major/Minor					
Minor1					
Conflicting Flow All	2944	1004	0	0	2007
Stage 1	2005	-	-	-	-
Stage 2	939	-	-	-	-
Critical Hdwy	5.74	7.14	-	-	5.34
Critical Hdwy Stg 1	6.64	-	-	-	-
Critical Hdwy Stg 2	6.04	-	-	-	-
Follow-up Hdwy	3.82	3.92	-	-	3.12
Pot Cap-1 Maneuver	28	206	-	-	124
Stage 1	56	-	-	-	-
Stage 2	308	-	-	-	-
Platoon blocked, %		-	-	-	-
Mov Cap-1 Maneuver	28	206	-	-	124
Mov Cap-2 Maneuver	28	-	-	-	-
Stage 1	56	-	-	-	-
Stage 2	306	-	-	-	-
Approach					
WB					
HCM Control Delay, s	73.6	0	0		
HCM LOS	F				
Minor Lane/Major Mvmt					
NBT	NBR	WB	SB		
Capacity (veh/h)	-	-	61	124	-
HCM Lane V/C Ratio	-	-	0.143	0.009	-
HCM Control Delay (s)	-	-	73.6	34.3	-
HCM Lane LOS	-	-	F	D	-
HCM 95th %tile Q(veh)	-	-	0.5	0	-

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Timings
6: Scottsdale Rd & 6750 North

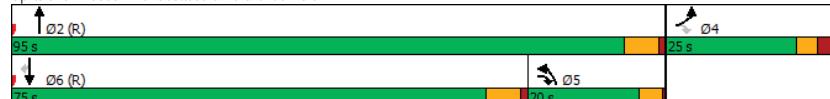
11/04/2020

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↑	↑	↑	↑↑↑	↑↑↑	↑
Traffic Volume (vph)	75	68	144	1735	2202	111
Future Volume (vph)	75	68	144	1735	2202	111
Turn Type	Prot	pm+ov	Prot	NA	NA	Perm
Protected Phases	4	5	5	2	6	
Permitted Phases			4			6
Detector Phase	4	5	5	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	4.0	4.0	10.0	10.0	10.0
Minimum Split (s)	36.2	8.0	8.0	36.0	36.9	36.9
Total Split (s)	25.0	20.0	20.0	95.0	75.0	75.0
Total Split (%)	20.8%	16.7%	16.7%	79.2%	62.5%	62.5%
Yellow Time (s)	3.0	3.5	3.5	4.9	4.9	4.9
All-Red Time (s)	3.0	0.5	0.5	1.1	1.1	1.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	4.0	4.0	6.0	6.0	6.0
Lead/Lag	Lag	Lag		Lead	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	C-Max	C-Max	C-Max
Act Effct Green (s)	7.3	27.1	16.0	104.1	82.9	82.9
Actuated g/C Ratio	0.06	0.23	0.13	0.87	0.69	0.69
v/c Ratio	0.39	0.21	0.34	0.43	0.68	0.11
Control Delay	59.3	35.9	65.5	4.1	17.0	8.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.3	35.9	65.5	4.1	17.0	8.0
LOS	E	D	E	A	B	A
Approach Delay	48.2			8.8	16.5	
Approach LOS	D			A	B	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.68
Intersection Signal Delay: 14.2 Intersection LOS: B
Intersection Capacity Utilization 64.2% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 6: Scottsdale Rd & 6750 North



HCM 6th Signalized Intersection Summary
6: Scottsdale Rd & 6750 North

11/04/2020

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↑	↑	↑	↑↑↑	↑↑↑	↑
Traffic Volume (veh/h)	75	68	144	1735	2202	111
Future Volume (veh/h)	75	68	144	1735	2202	111
Initial Q (Q _b) veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/in	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	82	74	157	1886	2393	121
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	0	0	1123	4851	2936	911
Arrive On Green	0.00	0.00	0.43	1.00	0.76	0.76
Sat Flow, veh/h	0		3456	5274	5274	1585
Grp Volume(v), veh/h	0.0		157	1886	2393	121
Grp Sat Flow(s), veh/h/in			1728	1702	1702	1585
Q Serve(g_s), s			3.3	0.0	35.1	2.4
Cycle Q Clear(g_c), s			3.3	0.0	35.1	2.4
Prop In Lane			1.00			1.00
Lane Grp Cap(c), veh/h			1123	4851	2936	911
V/C Ratio(X)			0.14	0.39	0.82	0.13
Avail Cap(c_a), veh/h			1123	4851	2936	911
HCM Platoated Ratio			1.33	1.33	1.33	1.33
Upstream Filter(l)			1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh			23.9	0.0	10.1	6.3
Incr Delay (d2), s/veh			0.1	0.2	2.6	0.3
Initial Q Delay(d3), s/veh			0.0	0.0	0.0	0.0
%ile BackOfQ(95%), veh/in			2.4	0.2	14.1	1.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh			24.0	0.2	12.7	6.6
LnGrp LOS			C	A	B	A
Approach Vol, veh/h					2043	2514
Approach Delay, s/veh					2.1	12.5
Approach LOS					A	B
Timer - Assigned Phs			2		5	6
Ph Duration (G+Y+Rc), s			120.0		45.0	75.0
Change Period (Y+Rc), s			* 6		* 6	* 6
Max Green Setting (Gmax), s			* 89		* 16	* 69
Max Q Clear Time (g_c+11), s			2.0		5.3	37.1
Green Ext Time (p_c), s			3.9		0.3	5.7
Intersection Summary						
HCM 6th Ctrl Delay					7.8	
HCM 6th LOS					A	
Notes						

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Timings
10: Quail Run Road & Lincoln Dr

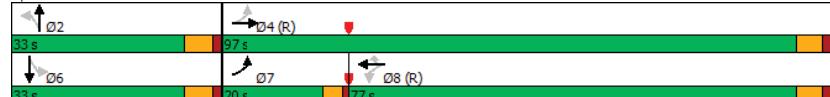
11/04/2020

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	↑	↑↓	↑	↑↓	↑	↓	↑	↑	↓
Traffic Volume (vph)	261	1080	5	1178	6	5	0	8	0
Future Volume (vph)	261	1080	5	1178	6	5	0	8	0
Turn Type	pm+pl	NA	Perm	NA	Perm	Perm	NA	Perm	NA
Protected Phases	7	4	8	8	2		2	6	6
Permitted Phases	4		8	8	2		6		
Detector Phase	7	4	8	8	2	2	6	6	
Switch Phase									
Minimum Initial (s)	4.0	15.0	15.0	15.0	7.0	7.0	7.0	7.0	
Minimum Split (s)	8.0	28.0	28.0	28.0	33.0	33.0	33.0	33.0	
Total Split (s)	20.0	97.0	77.0	77.0	33.0	33.0	33.0	33.0	
Total Split (%)	15.4%	74.6%	59.2%	59.2%	25.4%	25.4%	25.4%	25.4%	
Yellow Time (s)	3.0	4.0	4.0	4.0	4.5	4.5	4.5	4.5	
All-Red Time (s)	1.0	2.5	2.5	2.5	1.5	1.5	1.5	1.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	6.5	6.5	6.5	6.0	6.0	6.0	6.0	
Lead/Lag	Lead	Lag	Lag	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes					
Recall Mode	None	C-Max	C-Max	C-Max	C-Max	None	None	None	None
Act Effct Green (s)	112.8	110.3	91.9	91.9	91.9	7.2	7.2	7.2	
Actuated g/C Ratio	0.87	0.85	0.71	0.71	0.71	0.06	0.06	0.06	
v/c Ratio	0.65	0.39	0.02	0.51	0.01	0.10	0.12	0.52	
Control Delay	11.9	2.7	7.8	10.3	0.0	2.0	61.5	6.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	11.9	2.7	7.8	10.3	0.0	2.0	61.5	6.8	
LOS	B	A	A	B	A	A	E	A	
Approach Delay	4.5		10.2		2.0		9.6		
Approach LOS	A		B		A		A		

Intersection Summary

Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 107 (82%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.65
 Intersection Signal Delay: 7.3
 Intersection LOS: A
 Intersection Capacity Utilization 70.1%
 ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 10: Quail Run Road & Lincoln Dr



HCM 6th Signalized Intersection Summary

10: Quail Run Road & Lincoln Dr

11/04/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑↓	↑	↑↓	↑	↓	↑	↑	↓	↑	↓	
Traffic Volume (veh/h)	261	1080	5	1178	6	5	0	5	8	0	0	150
Future Volume (veh/h)	261	1080	5	1178	6	5	0	5	8	0	0	150
Initial Q (Q _b) veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No		No		No		No		No		No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	284	1174	5	5	1280	7	5	0	5	9	0	163
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	389	2840	12	378	2445	1091	56	13	27	187	0	192
Arrive On Green	0.06	0.78	0.78	0.69	0.69	0.12	0.00	0.12	0.12	0.00	0.12	0.00
Sat Flow, veh/h	1781	3629	15	476	3554	1585	117	108	226	1411	0	1585
Grp Volume(v), veh/h	284	575	604	5	1280	7	10	0	0	9	0	163
Grp Sat Flow(s), veh/h/ln	1781	1777	1868	476	1777	1585	451	0	0	1411	0	1585
Q Serve(g_s), s	5.7	13.5	13.5	0.4	22.8	0.2	0.1	0.0	0.0	0.0	0.0	13.1
Cycle Q Clear(g_c), s	5.7	13.5	13.5	1.7	22.8	0.2	13.2	0.0	0.0	1.0	0.0	13.1
Prop In Lane	1.00		0.01	1.00		1.00	0.50		0.50	1.00		1.00
Lane Grp Cap(c), veh/h	389	1390	1461	378	2445	1091	96	0	0	187	0	192
V/C Ratio(X)	0.73	0.41	0.41	0.05	0.52	0.01	0.10	0.00	0.00	0.05	0.00	0.85
Avail Cap(c_a), veh/h	494	1390	1461	378	2445	1091	216	0	0	308	0	329
HCM Platoato Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	0.76	0.76	0.76	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	11.2	4.5	4.5	6.8	9.9	6.4	51.0	0.0	0.0	50.6	0.0	55.9
Incr Delay (d2), s/veh	4.0	0.9	0.9	0.0	0.6	0.0	0.5	0.0	0.0	0.1	0.0	9.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%), veh/ln	6.9	8.1	8.4	0.1	12.8	0.1	0.5	0.0	0.5	0.0	0.5	0.7
Unsig. Movement Delay, s/veh												
LnGp Delay(d), s/veh	15.2	5.5	5.4	6.8	10.5	6.4	51.4	0.0	0.0	50.7	0.0	65.8
LnGp LOS	B	A	A	A	B	A	D	A	A	D	A	E
Approach Vol, veh/h	1463				1292				10		172	
Approach Delay, s/veh	7.3				10.5				51.4		65.0	
Approach LOS	A				B				D		E	
Timer - Assigned Phs	2		4			6	7	8				
Ph Duration (G+Y+Rc), s	21.8		108.2		21.8	12.3	95.9					
Change Period (Y+Rc), s	6.0		6.5		6.0	4.0	6.5					
Max Green Setting (Gmax), s	27.0		90.5		27.0	16.0	70.5					
Max Q Clear Time (g_c+11), s	15.2		15.5		15.1	7.7	24.8					
Green Ext Time (p_c), s	0.0		11.0		0.7	0.5	13.7					
Intersection Summary												
HCM 6th Ctrl Delay					12.2							
HCM 6th LOS					B							

Timings
11: Scottsdale Rd & Lincoln Dr

11/04/2020

Lane Group	EBL	EBT	EBC	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↑	↓	↑	↑	↓	↑	↑	↑	↑	↑
Traffic Volume (vph)	585	46	394	25	33	293	1376	37	1818	608
Future Volume (vph)	585	46	394	25	33	293	1376	37	1818	608
Turn Type	Split	NA	pm+ov	Split	NA	Prot	NA	Prot	NA	pm+ov
Protected Phases	8	8	5	4	4	5	2	1	6	8
Permitted Phases										6
Detector Phase	8	8	5	4	4	5	2	1	6	8
Switch Phase										
Minimum Initial (s)	8.0	8.0	5.0	5.0	5.0	5.0	20.0	5.0	20.0	8.0
Minimum Split (s)	40.0	40.0	9.0	40.0	40.0	9.0	28.0	9.0	28.0	40.0
Total Split (s)	26.0	26.0	19.0	19.0	19.0	61.0	14.0	56.0	26.0	
Total Split (%)	21.7%	21.7%	15.8%	15.8%	15.8%	50.8%	11.7%	46.7%	21.7%	
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0	3.0	4.5	3.0	4.5	4.0
All-Red Time (s)	3.0	3.0	1.0	3.0	3.0	1.0	1.5	1.0	1.5	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	4.0	7.0	7.0	4.0	6.0	4.0	6.0	7.0
Lead/Lag			Lag			Lag	Lead	Lag	Lead	
Lead-Lag Optimize?			Yes			Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	None	None	C-Max	None	C-Max	None
Act Effct Green (s)	25.6	25.6	42.5	6.5	6.5	13.9	56.9	8.8	50.0	81.6
Actuated g/C Ratio	0.21	0.21	0.35	0.05	0.05	0.12	0.47	0.07	0.42	0.68
v/c Ratio	0.96	0.95	0.65	0.28	0.41	0.80	0.64	0.31	0.93	0.55
Control Delay	85.8	83.7	20.0	61.3	29.6	67.2	25.6	60.9	55.5	14.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	85.8	83.7	20.0	61.3	29.6	67.2	25.6	60.9	55.5	14.6
LOS	F	F	C	E	C	E	C	E	E	B
Approach Delay		59.9			36.7		32.8		45.5	
Approach LOS		E			D		C		D	
Intersection Summary										
Cycle Length: 120										
Actuated Cycle Length: 120										
Offset: 90 (75%), Referenced to phase 2:NBT and 6:SBT, Start of Green										
Natural Cycle: 150										
Control Type: Actuated-Coordinated										
Maximum v/c Ratio: 0.96										
Intersection Signal Delay: 44.0										
Intersection LOS: D										
Intersection Capacity Utilization 81.7%										
ICU Level of Service D										
Analysis Period (min) 15										
Splits and Phases: 11: Scottsdale Rd & Lincoln Dr										
	Ø2 (R)		Ø1		Ø4		Ø8			
61 s		14 s		19 s		25 s				
Ø6 (R)		Ø5								
65 s		19 s								

HCM Signalized Intersection Capacity Analysis
11: Scottsdale Rd & Lincoln Dr

11/04/2020

Movement	EBL	EBT	EBC	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↓	↑	↑	↓	↑	↑	↑	↑	↑	↑	↑
Traffic Volume (vph)	585	46	394	25	33	53	293	1376	29	37	1818	608
Future Volume (vph)	585	46	394	25	33	53	293	1376	29	37	1818	608
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	4.0	7.0	7.0	4.0	6.0	4.0	6.0	7.0	7.0	7.0
Lane Util. Factor	0.95	0.95	1.00	1.00	0.95	0.97	0.91	1.00	1.00	1.00	0.91	1.00
Frt	1.00	1.00	0.85	1.00	0.91	1.00	1.00	1.00	1.00	1.00	0.85	
Flt Protected	0.95	0.96	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Satl. Flow (prot)	1681	1697	1583	1770	3212		3433	5069		1770	5085	1583
Flt Permitted	0.95	0.96	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Satl. Flow (perm)	1681	1697	1583	1770	3212		3433	5069		1770	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	636	50	428	27	36	58	318	1496	32	40	1976	661
RTOR Reduction (vph)	0	0	100	0	55	0	0	2	0	0	0	148
Lane Group Flow (vph)	343	343	328	27	39	0	318	1526	0	40	1976	513
Turn Type	Split	NA	pm+ov	Split	NA	Prot	NA	Prot	NA	pm+ov		
Protected Phases	8	8	5	4	4		5	2	1	6	8	
Permitted Phases												6
Actuated Green, G (s)	25.6	25.6	40.3	6.5	6.5		14.7	56.1	7.8	49.2	74.8	
Effective Green, g (s)	25.6	25.6	40.3	6.5	6.5		14.7	56.1	7.8	49.2	74.8	
Actuated g/C Ratio	0.21	0.21	0.34	0.05	0.05	0.05	0.12	0.47	0.06	0.41	0.62	
Clearance Time (s)	7.0	7.0	4.0	7.0	7.0		4.0	6.0	4.0	6.0	7.0	
Vehicle Extension (s)	2.0	2.0	1.0	2.0	2.0		1.0	0.2	1.0	0.2	2.0	
Lane Grp Cap (vph)	358	362	531	95	173		420	2369	115	2084	1079	
v/s Ratio Prot	c0.20	0.20	0.08	c0.02	0.01		c0.09	0.30	0.02	c0.39	0.10	
v/s Ratio Perm												0.22
v/c Ratio	0.96	0.95	0.62	0.28	0.23		0.76	0.64	0.35	0.95	0.48	
Uniform Delay, d1	46.7	46.5	33.4	54.5	54.3		50.9	24.3	53.7	34.2	12.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.07	1.43	3.44	
Incremental Delay, d2	36.0	33.3	1.5	0.6	0.2		6.8	1.4	0.6	9.3	0.1	
Delay (s)	82.6	79.8	34.9	55.1	54.6		57.7	25.7	57.9	58.1	41.8	
Level of Service	F	E	C	E	D		E	C	E	E	D	
Approach Delay (s)		63.4					54.7		31.2		54.1	
Approach LOS		E					D		C		D	
Intersection Summary												
HCM 2000 Control Delay							48.6					D
HCM 2000 Volume to Capacity ratio							0.88					
Actuated Cycle Length (s)							120.0		Sum of lost time (s)		24.0	
Intersection Capacity Utilization							81.7%		ICU Level of Service		D	
Analysis Period (min)							15					
c - Critical Lane Group												

HCM 6th TWSC
14: Palmerae Drive & Indian Bend Rd.

11/04/2020

Intersection						
Int Delay, s/veh	2					
Movement	EBT	EBC	WBL	WBT	NBL	NBR
Lane Configurations	↑		↑	↑	↑	↑
Traffic Vol, veh/h	146	24	38	158	19	34
Future Vol, veh/h	146	24	38	158	19	34
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	159	26	41	172	21	37
Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	185	0	426	172
Stage 1	-	-	-	-	172	-
Stage 2	-	-	-	-	254	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1390	-	585	872
Stage 1	-	-	-	-	858	-
Stage 2	-	-	-	-	788	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1390	-	566	872
Mov Cap-2 Maneuver	-	-	-	-	566	-
Stage 1	-	-	-	-	858	-
Stage 2	-	-	-	-	762	-
Approach	EB	WB	NB			
HCM Control Delay, s	0	1.5	10.1			
HCM LOS			B			
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBC	WBL	WBT
Capacity (veh/h)	566	872	-	-	1390	-
HCM Lane V/C Ratio	0.036	0.042	-	-	0.03	-
HCM Control Delay (s)	11.6	9.3	-	-	7.7	0
HCM Lane LOS	B	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0.1	-

HCM 6th TWSC
15: Scottsdale Rd & Street B (Access B)

11/04/2020

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBC	NBL	NBT	SBT	SBR
Lane Configurations	↑		↑↑↑	↑↑↑	↑	↑
Traffic Vol, veh/h	0	38	0	1870	1820	105
Future Vol, veh/h	0	38	0	1870	1820	105
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	41	0	2033	1978	114
Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	-	1046	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	-	-	-	-
Pot Cap-1 Maneuver	0	193	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	193	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB	SB			
HCM Control Delay, s	28.7	0	0			
HCM LOS	D					
Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR		
Capacity (veh/h)	-	193	-	-	-	-
HCM Lane V/C Ratio	-	0.214	-	-	-	-
HCM Control Delay (s)	-	28.7	-	-	-	-
HCM Lane LOS	-	D	-	-	-	-
HCM 95th %tile Q(veh)	-	0.8	-	-	-	-

HCM 6th TWSC
16: Scottsdale Rd & Tuckey Ln

11/04/2020

Intersection						
Int Delay, s/veh	0.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		↑↑↑		Y	↑↑↑
Traffic Vol, veh/h	3	10	1835	2	8	2107
Future Vol, veh/h	3	10	1835	2	8	2107
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	125	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	11	1995	2	9	2290
Major/Minor						
Minor1		Major1		Major2		
Conflicting Flow All	2930	999	0	0	1997	0
Stage 1	1996	-	-	-	-	-
Stage 2	934	-	-	-	-	-
Critical Hdwy	5.74	7.14	-	-	5.34	-
Critical Hdwy Stg 1	6.64	-	-	-	-	-
Critical Hdwy Stg 2	6.04	-	-	-	-	-
Follow-up Hdwy	3.82	3.92	-	-	3.12	-
Pot Cap-1 Maneuver	29	208	-	-	125	-
Stage 1	57	-	-	-	-	-
Stage 2	310	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	27	208	-	-	125	-
Mov Cap-2 Maneuver	27	-	-	-	-	-
Stage 1	57	-	-	-	-	-
Stage 2	288	-	-	-	-	-
Approach						
WB		NB		SB		
HCM Control Delay, s	57.8	-	0	-	0.1	-
HCM LOS	F	-	-	-	-	-
Minor Lane/Major Mvmt						
NBT		NBR		WBLn1		
Capacity (veh/h)	-	-	82	125	-	-
HCM Lane V/C Ratio	-	-	0.172	0.07	-	-
HCM Control Delay (s)	-	-	57.8	35.9	-	-
HCM Lane LOS	-	-	F	E	-	-
HCM 95th %tile Q(veh)	-	-	0.6	0.2	-	-

HCM 6th TWSC
21:

Intersection						
Int Delay, s/veh	0.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		1	0	294	0 11
Traffic Vol, veh/h	164	-	1	0	294	0 11
Future Vol, veh/h	164	-	1	0	294	0 11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	-	0	0
Grade, %	0	-	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	178	1	0	320	0	12
Major/Minor						
Major1		Major2		Minor1		
Conflicting Flow All	0	0	-	-	-	90
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.319
Pot Cap-1 Maneuver	-	-	0	-	0	950
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	-	950
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach						
EB		WB		NB		
HCM Control Delay, s	0	-	0	-	8.8	-
HCM LOS	A	-	-	-	-	-
Minor Lane/Major Mvmt						
NBLn1		EBT		WBT		
Capacity (veh/h)	950	-	-	-	-	-
HCM Lane V/C Ratio	0.013	-	-	-	-	-
HCM Control Delay (s)	8.8	-	-	-	-	-
HCM Lane LOS	A	-	-	-	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-	-

HCM 6th TWSC
37: 6750 North & Street C

11/04/2020

Intersection												
Int Delay, s/veh	10.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↓	↑	↓	↑	↓	↑	↓	↑	↓	↑	↓
Traffic Vol, veh/h	3	9	2	6	15	19	1	156	2	12	305	1
Future Vol, veh/h	3	9	2	6	15	19	1	156	2	12	305	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	None	-	-	None	-	-	None	-
Storage Length	75	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	0	-	-
Grade, %	-	0	-	-	0	-	-	0	-	0	-	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	10	2	7	16	21	1	170	2	13	332	1
Major/Minor												
Major/Minor	Major1	Major2	Minor1	Minor2								
Conflicting Flow All	37	0	0	12	0	0	224	68	11	144	59	27
Stage 1	-	-	-	-	-	-	17	17	-	41	41	-
Stage 2	-	-	-	-	-	-	207	51	-	103	18	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1574	-	-	1607	-	-	732	823	1070	825	832	1048
Stage 1	-	-	-	-	-	-	1002	881	-	974	861	-
Stage 2	-	-	-	-	-	-	795	852	-	903	880	-
Platoon blocked, %	-	-	-	-	-	-						
Mov Cap-1 Maneuver	1574	-	-	1607	-	-	501	818	1070	689	827	1048
Mov Cap-2 Maneuver	-	-	-	-	-	-	501	818	-	689	827	-
Stage 1	-	-	-	-	-	-	1000	879	-	972	858	-
Stage 2	-	-	-	-	-	-	485	849	-	726	878	-
Approach												
Approach	EB	WB	NB	SB								
HCM Control Delay, s	1.6	1.1	10.6	12.5								
HCM LOS		B	B	B								
Minor Lane/Major Mvmt												
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	817	1574	-	-	1607	-	-	821				
HCM Lane V/C Ratio	0.212	0.002	-	-	0.004	-	-	0.421				
HCM Control Delay (s)	10.6	7.3	-	-	7.2	-	-	12.5				
HCM Lane LOS	B	A	-	-	A	-	-	B				
HCM 95th %tile Q(veh)	0.8	0	-	-	0	-	-	2.1				

HCM 6th Roundabout
3: Indian Bend Rd. & Scottsdale Plaza Resort

11/04/2020

Intersection			
Intersection Delay, s/veh	5.9	Intersection LOS	A
Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	195	521	189
Demand Flow Rate, veh/h	198	531	193
Vehicles Circulating, veh/h	333	15	189
Vehicles Exiting, veh/h	216	367	342
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	5.7	6.4	4.7
Approach LOS	A	A	A
Lane	Left	Left	Left
Designated Moves	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	198	531	193
Cap Entry Lane, veh/h	983	1359	1138
Entry HV Adj Factor	0.982	0.981	0.979
Flow Entry, veh/h	195	521	189
Cap Entry, veh/h	965	1333	1114
V/C Ratio	0.202	0.391	0.170
Control Delay, s/veh	5.7	6.4	4.7
LOS	A	A	A
95th %tile Queue, veh	1	2	1

HCM 6th TWSC
5: Scottsdale Rd & Joshua Tree Ln

11/04/2020

Intersection						
Int Delay, s/veh 0.1						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		↑↑↑		Y	↑↑↑
Traffic Vol, veh/h	3	5	1843	4	1	2155
Future Vol, veh/h	3	5	1843	4	1	2155
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	5	2003	4	1	2342
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	2944	1004	0	0	2007	0
Stage 1	2005	-	-	-	-	-
Stage 2	939	-	-	-	-	-
Critical Hdwy	5.74	7.14	-	-	5.34	-
Critical Hdwy Stg 1	6.64	-	-	-	-	-
Critical Hdwy Stg 2	6.04	-	-	-	-	-
Follow-up Hdwy	3.82	3.92	-	-	3.12	-
Pot Cap-1 Maneuver	28	206	-	-	124	-
Stage 1	56	-	-	-	-	-
Stage 2	308	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	28	206	-	-	124	-
Mov Cap-2 Maneuver	28	-	-	-	-	-
Stage 1	56	-	-	-	-	-
Stage 2	306	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	73.6	0	0			
HCM LOS	F					
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT	
Capacity (veh/h)	-	-	61	124	-	
HCM Lane V/C Ratio	-	-	0.143	0.009	-	
HCM Control Delay (s)	-	-	73.6	34.3	-	
HCM Lane LOS	-	-	F	D	-	
HCM 95th %tile Q(veh)	-	-	0.5	0	-	

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Timings
6: Scottsdale Rd & 6750 North

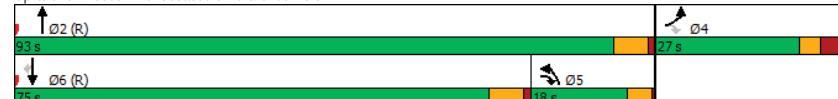
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Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y	Y	Y	↑↑↑	↑↑↑	Y
Traffic Volume (vph)	75	68	144	1735	2202	111
Future Volume (vph)	75	68	144	1735	2202	111
Turn Type	Prot	pm+ov	Prot	NA	NA	Perm
Protected Phases	4	5	5	2	6	
Permitted Phases						6
Detector Phase	4	5	5	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	4.0	4.0	10.0	10.0	10.0
Minimum Split (s)	36.2	8.0	8.0	36.0	36.9	36.9
Total Split (s)	27.0	18.0	18.0	93.0	75.0	75.0
Total Split (%)	22.5%	15.0%	15.0%	77.5%	62.5%	62.5%
Yellow Time (s)	3.0	3.5	3.5	4.9	4.9	4.9
All-Red Time (s)	3.0	0.5	0.5	1.1	1.1	1.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	4.0	4.0	6.0	6.0	6.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	C-Max	C-Max	C-Max
Act Effct Green (s)	7.3	25.1	14.0	104.1	84.9	84.9
Actuated g/C Ratio	0.06	0.21	0.12	0.87	0.71	0.71
v/c Ratio	0.39	0.13	0.39	0.43	0.67	0.11
Control Delay	59.3	34.0	64.8	3.5	13.9	6.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.3	34.0	64.8	3.5	13.9	6.7
LOS	E	C	E	A	B	A
Approach Delay	47.3			8.2	13.5	
Approach LOS	D			A	B	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%) Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.67
Intersection Signal Delay: 12.3
Intersection Capacity Utilization 64.2%
ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 6: Scottsdale Rd & 6750 North



Scenario 1 Palmerale 12:00 am 10/29/2020 Total 2023 AM - Addendum Mitigated
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HCM 6th Signalized Intersection Summary

6: Scottsdale Rd & 6750 North

11/04/2020

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↑	↑	↑	↑↑↑	↑↑↑	↑
Traffic Volume (veh/h)	75	68	144	1735	2202	111
Future Volume (veh/h)	75	68	144	1735	2202	111
Initial Q (Ob), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No	No	No	No	No	No
Adj Sat Flow, veh/h/in	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	82	74	157	1886	2393	121
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	0	0	1123	4851	2936	911
Arrive On Green	0.00	0.00	0.43	1.00	0.76	0.76
Sat Flow, veh/h	0	3456	5274	5274	1585	
Grp Volume(v), veh/h	0.0	157	1886	2393	121	
Grp Sat Flow(s), veh/h/in		1728	1702	1702	1585	
O Serve(g_s), s	3.3	0.0	35.1	2.4		
CycI Q Clear(g_c), s	3.3	0.0	35.1	2.4		
Prop In Lane	1.00		1.00			
Lane Grp Cap(c), veh/h	1123	4851	2936	911		
V/C Ratio(X)	0.14	0.39	0.82	0.13		
Avail Cap(c_a), veh/h	1123	4851	2936	911		
HCM Platoon Ratio	1.33	1.33	1.33	1.33		
Upstream Filter(l)	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	23.9	0.0	10.1	6.3		
Incr Delay (d2), s/veh	0.1	0.2	2.6	0.3		
Initial O Delay(d3), s/veh	0.0	0.0	0.0	0.0		
%ile BackOf(95%), veh/in	2.4	0.2	14.1	1.6		
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	24.0	0.2	12.7	6.6		
LnGrp LOS	C	A	B	A		
Approach Vol, veh/h		2043	2514			
Approach Delay, s/veh		2.1	12.5			
Approach LOS		A	B			
Timer - Assigned Phs	2		5	6		
Phs Duration (G+Y+Rc), s	120.0		45.0	75.0		
Change Period (Y+Rc), s	* 6		* 6	* 6		
Max Green Setting (Gmax), s	* 87		* 14	* 69		
Max O Clear Time (g_c+1), s	2.0		5.3	37.1		
Green Ext Time (p_c), s	3.9		0.3	5.7		
Intersection Summary						
HCM 6th Ctrl Delay		7.8				
HCM 6th LOS		A				
Notes						

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Timings

10: Quail Run Road & Lincoln Dr

11/04/2020

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	↑	↑↑	↑	↑↑	↑	↑	↑	↑	↑
Traffic Volume (vph)	261	1080	5	1178	6	5	0	8	0
Future Volume (vph)	261	1080	5	1178	6	5	0	8	0
Turn Type	pm+pt	NA	Perm	NA	Perm	Perm	NA	Perm	NA
Protected Phases	7	4			8		2		6
Permitted Phases	4		8		8	2		6	
Detector Phase	7	4	8	8	8	2	2	6	6
Switch Phase									
Minimum Initial (s)	4.0	15.0	15.0	15.0	15.0	7.0	7.0	7.0	7.0
Minimum Split (s)	8.0	28.0	28.0	28.0	33.0	33.0	33.0	33.0	33.0
Total Split (s)	20.0	97.0	77.0	77.0	33.0	33.0	33.0	33.0	33.0
Total Split (%)	15.4%	74.6%	59.2%	59.2%	59.2%	25.4%	25.4%	25.4%	25.4%
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	4.5	4.5	4.5	4.5
All-Red Time (s)	1.0	2.5	2.5	2.5	1.5	1.5	1.5	1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.5	6.5	6.5	6.5	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lag	Lag				
Lead-Lag Optimize?	Yes		Yes	Yes	Yes				
Recall Mode	None	C-Max	C-Max	C-Max	C-Max	None	None	None	None
Act Effct Green (s)	112.8	110.3	91.9	91.9	91.9	7.2	7.2	7.2	7.2
Actuated Cycle Length: 130									
Offset: 107 (82%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green									
Natural Cycle: 90									
Control Type: Actuated-Coordinated									
Maximum v/c Ratio: 0.65									
Intersection Signal Delay: 7.3									
Intersection LOS: A									
Intersection Capacity Utilization: 70.1%									
ICU Level of Service C									
Analysis Period (min) 15									
Splits and Phases: 10: Quail Run Road & Lincoln Dr									
	↑ 02		↑ 04 (R)						
	↓ 03	97 s							
	↓ 06		↑ 07		↓ 08 (R)				
	↓ 03	20 s	77 s						

HCM Signalized Intersection Capacity Analysis

11: Scottsdale Rd & Lincoln Dr

11/04/2020

Movement	EBL	EBT	EBC	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑
Traffic Volume (vph)	585	46	394	25	33	53	293	1376	29	37	1818	608
Future Volume (vph)	585	46	394	25	33	53	293	1376	29	37	1818	608
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	4.0	7.0	7.0		4.0	6.0		4.0	6.0	7.0
Lane Util. Factor	0.95	0.95	1.00	1.00	0.95		0.97	0.91		1.00	0.91	1.00
Frt	1.00	1.00	0.85	1.00	0.91		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	0.96	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Sald. Flow (prot)	1681	1697	1583	1770	3212		3433	5069		1770	5085	1583
Flt Permitted	0.95	0.96	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Sald. Flow (perm)	1681	1697	1583	1770	3212		3433	5069		1770	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92		0.92	0.92		0.92	0.92	0.92
Adj. Flow (vph)	636	50	428	27	36	58	318	1496	32	40	1976	661
RTOR Reduction (vph)	0	0	100	0	55	0	0	2	0	0	0	134
Lane Group Flow (vph)	343	343	328	27	39	0	318	1526	0	40	1976	527
Turn Type	Split	NA	pm+ov	Split	NA		Prot	NA		Prot	NA	pm+ov
Protected Phases	8	8	5	4	4		5	2		1	6	8
Permitted Phases			8									6
Actuated Green, G (s)	29.5	29.5	41.3	6.5	6.5		11.8	52.0		8.0	48.2	77.7
Effective Green, g (s)	29.5	29.5	41.3	6.5	6.5		11.8	52.0		8.0	48.2	77.7
Actuated g/C Ratio	0.25	0.25	0.34	0.05	0.05		0.10	0.43		0.07	0.40	0.65
Clearance Time (s)	7.0	7.0	4.0	7.0	7.0		4.0	6.0		4.0	6.0	7.0
Vehicle Extension (s)	2.0	2.0	1.0	2.0	2.0		1.0	0.2		1.0	0.2	2.0
Lane Grp Cap (vph)	413	417	544	95	173		337	2196		118	2042	1117
v/s Ratio Prot	c0.20	0.20	0.06	c0.02	0.01		c0.09	0.30		0.02	c0.39	0.12
v/s Ratio Perm			0.15									0.22
v/c Ratio	0.83	0.82	0.60	0.28	0.23		0.94	0.70		0.34	0.97	0.47
Uniform Delay, d1	42.9	42.8	32.6	54.5	54.3		53.8	27.6		53.5	35.1	10.7
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.09	1.37	3.21
Incremental Delay, d2	12.7	11.8	1.3	0.6	0.2		34.0	1.8		0.5	12.1	0.1
Delay (s)	55.6	54.6	33.8	55.1	54.6		87.8	29.4		58.9	60.1	34.5
Level of Service	E	D	C	E	D		F	C		E	E	C
Approach Delay (s)	46.9			54.7			39.5					53.8
Approach LOS	D			D			D			D		
Intersection Summary												
HCM 2000 Control Delay	47.9											
HCM 2000 Level of Service												
HCM 2000 Volume to Capacity ratio	0.88											
Actuated Cycle Length (s)	120.0											
Sum of lost time (s)							24.0					
Intersection Capacity Utilization	81.7%											
ICU Level of Service												
Analysis Period (min)	15											

c Critical Lane Group

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HCM 6th TWSC

14: Palmerae Drive & Indian Bend Rd.

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Intersection						
Int Delay, s/veh						
Movement	EBT	EBC	WBL	WBT	NBL	
Lane Configurations	↑	↑	↑	↑	↑	
Traffic Vol, veh/h	146	24	38	158	19	34
Future Vol, veh/h	146	24	38	158	19	34
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	159	26	41	172	21	37
Major/Minor						
Major1						
Conflicting Flow All	0	0	185	0	426	172
Stage 1	-	-	-	-	172	-
Stage 2	-	-	-	-	254	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1390	-	585	872
Stage 1	-	-	-	-	858	-
Stage 2	-	-	-	-	788	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1390	-	566	872
Mov Cap-2 Maneuver	-	-	-	-	566	-
Stage 1	-	-	-	-	858	-
Stage 2	-	-	-	-	762	-
Approach						
EB						
HCM Control Delay, s	0		1.5		10.1	
HCM LOS					B	
Minor Lane/Major Mvmt						
NBLn1 NBLn2 EBT EBC WBL WBT						
Capacity (veh/h)	566	872	-	-	1390	-
HCM Lane V/C Ratio	0.036	0.042	-	-	0.03	-
HCM Control Delay (s)	11.6	9.3	-	-	7.7	0
HCM Lane LOS	B	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0.1	-

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HCM 6th TWSC
15: Scottsdale Rd & Street B (Access B)

11/04/2020

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBC	NBL	NBT	SBT	SBR
Lane Configurations		↑	↑↑↑	↑↑↑		
Traffic Vol, veh/h	0	38	0	1870	1820	105
Future Vol, veh/h	0	38	0	1870	1820	105
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	41	0	2033	1978	114
Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	-	1046	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	-	-	-	-
Pot Cap-1 Maneuver	0	193	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	193	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB	SB			
HCM Control Delay, s	28.7	0	0			
HCM LOS	D					
Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR		
Capacity (veh/h)	-	193	-	-		
HCM Lane V/C Ratio	-	0.214	-	-		
HCM Control Delay (s)	-	28.7	-	-		
HCM Lane LOS	-	D	-	-		
HCM 95th %tile Q(veh)	-	0.8	-	-		

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HCM 6th TWSC
16: Scottsdale Rd & Tuckey Ln

11/04/2020

Intersection						
Int Delay, s/veh	0.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↑	↑↑↑		↑↑↑		
Traffic Vol, veh/h	3	10	1835	2	8	2107
Future Vol, veh/h	3	10	1835	2	8	2107
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	125	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	11	1995	2	9	2290
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	2930	999	0	0	1997	0
Stage 1	1996	-	-	-	-	-
Stage 2	934	-	-	-	-	-
Critical Hdwy	5.74	7.14	-	-	5.34	-
Critical Hdwy Stg 1	6.64	-	-	-	-	-
Critical Hdwy Stg 2	6.04	-	-	-	-	-
Follow-up Hdwy	3.82	3.92	-	-	3.12	-
Pot Cap-1 Maneuver	29	208	-	-	125	-
Stage 1	57	-	-	-	-	-
Stage 2	310	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	27	208	-	-	125	-
Mov Cap-2 Maneuver	27	-	-	-	-	-
Stage 1	57	-	-	-	-	-
Stage 2	288	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	57.8	0	0.1			
HCM LOS	F					
Minor Lane/Major Mvmt	NBT	NBR	BLN1	SBL	SBT	
Capacity (veh/h)	-	-	82	125	-	
HCM Lane V/C Ratio	-	-	0.172	0.07	-	
HCM Control Delay (s)	-	-	57.8	35.9	-	
HCM Lane LOS	-	-	F	E	-	
HCM 95th %tile Q(veh)	-	-	0.6	0.2	-	

Scenario 1 Palmerale 12:00 am 10/29/2020 Total 2023 AM - Addendum Mitigated
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HCM 6th TWSC

21:

11/04/2020

Intersection

Int Delay, s/veh 0.2

Movement EBT EBR WBL WBT NBL NBR

Lane Configurations	↑↑	1	0	294	0	11
Traffic Vol, veh/h	164	1	0	294	0	11
Future Vol, veh/h	164	1	0	294	0	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	178	1	0	320	0	12

Major/Minor Major1 Major2 Minor1

Conflicting Flow All 0 0 - - - 90

Stage 1 - - - - - -

Stage 2 - - - - - -

Critical Hdwy - - - - - 6.93

Critical Hdwy Stg 1 - - - - - -

Critical Hdwy Stg 2 - - - - - -

Follow-up Hdwy - - - - - 3.319

Pot Cap-1 Maneuver - - 0 - 0 950

Stage 1 - - 0 - 0 -

Stage 2 - - 0 - 0 -

Platoon blocked, % - - -

Mov Cap-1 Maneuver - - - - - 950

Mov Cap-2 Maneuver - - - - - -

Stage 1 - - - - - -

Stage 2 - - - - - -

Approach EB WB NB

HCM Control Delay, s 0 0 8.8

HCM LOS A

Minor Lane/Major Mvmt NBLn1 EBT EBR WBT

Capacity (veh/h) 950 - - -

HCM Lane V/C Ratio 0.013 - - -

HCM Control Delay (s) 8.8 - - -

HCM Lane LOS A - - -

HCM 95th %tile Q(veh) 0 - - -

HCM 6th TWSC

37: 6750 North & Street C

11/04/2020

Intersection

Int Delay, s/veh 10.8

Movement EBL EBT EBR WBL WBT NBL NBT NBR SBL SBT SBR

Lane Configurations	↖	↑	2	6	15	19	1	156	2	12	305	1
Traffic Vol, veh/h	3	9	2	6	15	19	1	156	2	12	305	1
Future Vol, veh/h	3	9	2	6	15	19	1	156	2	12	305	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	None	-	None	-	None	-	-	None	-	None	-
Storage Length	75	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	10	2	7	16	21	1	170	2	13	332	1

Major/Minor Major1 Major2 Minor1 Minor2

Conflicting Flow All 37 0 0 12 0 0 224 68 11 144 59 27

Stage 1 - - - - - 17 17 - 41 41 -

Stage 2 - - - - - 207 51 - 103 18 -

Critical Hdwy 4.12 - - 4.12 - - 7.12 6.52 6.22 7.12 6.52 6.22

Critical Hdwy Stg 1 - - - - - 6.12 5.52 - 6.12 5.52 -

Critical Hdwy Stg 2 - - - - - 6.12 5.52 - 6.12 5.52 -

Follow-up Hdwy 2.218 - - 2.218 - - 3.518 4.018 3.318 3.518 4.018 3.318

Pot Cap-1 Maneuver 1574 - - 1607 - - 732 823 1070 825 832 1048

Stage 1 - - - - - 1002 881 - 974 861 -

Stage 2 - - - - - 795 852 - 903 880 -

Platoon blocked, % - - - - - -

Mov Cap-1 Maneuver 1574 - - 1607 - - 501 818 1070 689 827 1048

Mov Cap-2 Maneuver - - - - - - 501 818 - 689 827 -

Stage 1 - - - - - - 1000 879 - 972 858 -

Stage 2 - - - - - - 485 849 - 726 878 -

Approach EB WB NB SB

HCM Control Delay, s 1.6 1.1 10.6 12.5

HCM LOS B B

Minor Lane/Major Mvmt NBLn1 EBL EBT EBR WBL WBT WBR SBLn1

Capacity (veh/h) 817 1574 - - 1607 - - 821

HCM Lane V/C Ratio 0.212 0.002 - - 0.004 - - 0.421

HCM Control Delay (s) 10.6 7.3 - - 7.2 - - 12.5

HCM Lane LOS B A - - A - - B

HCM 95th %tile Q(veh) 0.8 0 - - 0 - - 2.1

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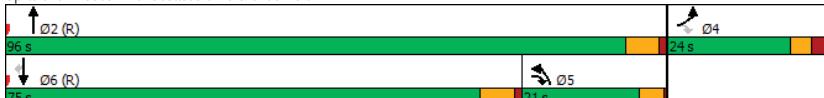
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Timings
6: Scottsdale Rd & 6750 North

11/04/2020

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↑	↑	↑	↑↑↑	↑↑↑	↑
Traffic Volume (vph)	159	208	160	2484	2303	43
Future Volume (vph)	159	208	160	2484	2303	43
Turn Type	Prot	pm+ov	Prot	NA	NA	Perm
Protected Phases	4	5	5	2	6	
Permitted Phases			4			6
Detector Phase	4	5	5	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	4.0	4.0	10.0	10.0	10.0
Minimum Split (s)	36.2	8.0	8.0	36.0	36.9	36.9
Total Split (s)	24.0	21.0	21.0	96.0	75.0	75.0
Total Split (%)	20.0%	17.5%	17.5%	80.0%	62.5%	62.5%
Yellow Time (s)	3.0	3.5	3.5	4.9	4.9	4.9
All-Red Time (s)	3.0	0.5	0.5	1.1	1.1	1.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	4.0	4.0	6.0	6.0	6.0
Lead/Lag	Lag	Lag		Lead	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	C-Max	C-Max	C-Max
Act Effct Green (s)	10.4	33.4	17.0	97.6	76.6	76.6
Actuated g/C Ratio	0.09	0.28	0.14	0.81	0.64	0.64
v/c Ratio	0.58	0.51	0.36	0.65	0.77	0.05
Control Delay	60.4	40.3	56.9	9.0	24.9	11.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.4	40.3	56.9	9.0	24.9	11.1
LOS	E	D	E	A	C	B
Approach Delay	49.0			11.9	24.7	
Approach LOS	D			B	C	
Intersection Summary						
Cycle Length: 120						
Actuated Cycle Length: 120						
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green						
Natural Cycle: 95						
Control Type: Actuated-Coordinated						
Maximum v/c Ratio: 0.77						
Intersection Signal Delay: 20.0			Intersection LOS: C			
Intersection Capacity Utilization 66.9%			ICU Level of Service C			
Analysis Period (min) 15						
Splits and Phases: 6: Scottsdale Rd & 6750 North						
						

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HCM 6th Signalized Intersection Summary
6: Scottsdale Rd & 6750 North

11/04/2020

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↑	↑	↑	↑↑↑	↑↑↑	↑
Traffic Volume (veh/h)	159	208	160	2484	2303	43
Future Volume (veh/h)	159	208	160	2484	2303	43
Initial Q (Q _b) veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No	No		
Adj Sat Flow, veh/h/in	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	173	226	174	2700	2503	47
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	0	0	1123	4851	2936	911
Arrive On Green	0.00	0.00	0.43	1.00	0.57	0.57
Sat Flow, veh/h	0		3456	5274	5274	1585
Grp Volume(v), veh/h	0.0		174	2700	2503	47
Grp Sat Flow(s), veh/h/in			1728	1702	1702	1585
Q Serve(g_s), s			3.7	0.0	49.0	1.6
Cycle Q Clear(g_c), s			3.7	0.0	49.0	1.6
Prop In Lane			1.00			1.00
Lane Grp Cap(c), veh/h			1123	4851	2936	911
V/C Ratio(X)			0.15	0.56	0.85	0.05
Avail Cap(c_a), veh/h			1123	4851	2936	911
HCM Platooning Ratio			1.33	1.33	1.00	1.00
Upstream Filter(l)			1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh			24.0	0.0	21.3	11.2
Incr Delay (d2), s/veh			0.1	0.5	3.4	0.1
Initial Q Delay(d3), s/veh			0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/in			1.5	0.2	19.4	0.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh			24.1	0.5	24.6	11.3
LnGrp LOS			C	A	C	B
Approach Vol, veh/h					2874	2550
Approach Delay, s/veh					1.9	24.4
Approach LOS					A	C
Timer - Assigned Phs			2		5	6
Ph Duration (G+Y+R _c), s			120.0		45.0	75.0
Change Period (Y+R _c), s			* 6		* 6	* 6
Max Green Setting (Gmax), s			* 90		* 17	* 69
Max Q Clear Time (g_c+11), s			2.0		5.7	51.0
Green Ext Time (p_c), s			7.6		0.4	5.7
Intersection Summary						
HCM 6th Ctrl Delay					12.5	
HCM 6th LOS					B	
Notes						

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

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HCM 6th TWSC
14: Street A (Access A) & Indian Bend Rd.

11/04/2020

Intersection						
Int Delay, s/veh	4					
Movement	EBT	EBC	WBL	WBT	NBL	NBR
Lane Configurations	↑		↑	↑	↑	↑
Traffic Vol, veh/h	144	65	92	178	62	92
Future Vol, veh/h	144	65	92	178	62	92
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	157	71	100	193	67	100
Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	228	0	586	193
Stage 1	-	-	-	-	193	-
Stage 2	-	-	-	-	393	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1340	-	473	849
Stage 1	-	-	-	-	840	-
Stage 2	-	-	-	-	682	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1340	-	433	849
Mov Cap-2 Maneuver	-	-	-	-	433	-
Stage 1	-	-	-	-	840	-
Stage 2	-	-	-	-	625	-
Approach	EB	WB	NB			
HCM Control Delay, s	0	2.7	11.8			
HCM LOS			B			
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBC	WBL	WBT
Capacity (veh/h)	433	849	-	-	1340	-
HCM Lane V/C Ratio	0.156	0.118	-	-	0.075	-
HCM Control Delay (s)	14.8	9.8	-	-	7.9	0
HCM Lane LOS	B	A	-	-	A	A
HCM 95th %tile Q(veh)	0.5	0.4	-	-	0.2	-

HCM 6th TWSC
15: Scottsdale Rd & Street B (Access B)

11/04/2020

Intersection						
Int Delay, s/veh	1.2					
Movement	EBL	EBC	NBL	NBT	SBT	SBR
Lane Configurations	↑		↑↑↑	↑↑↑	↑	↑
Traffic Vol, veh/h	0	114	0	2672	1785	129
Future Vol, veh/h	0	114	0	2672	1785	129
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	124	0	2904	1940	140
Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	-	1040	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	-	-	-	-
Pot Cap-1 Maneuver	0	195	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	195	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB	SB			
HCM Control Delay, s	51	0	0			
HCM LOS	F					
Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR		
Capacity (veh/h)	-	195	-	-		
HCM Lane V/C Ratio	-	0.635	-	-		
HCM Control Delay (s)	-	51	-	-		
HCM Lane LOS	-	F	-	-		
HCM 95th %tile Q(veh)	-	3.7	-	-		

HCM 6th TWSC
16: Scottsdale Rd & Tuckey Ln

11/04/2020

Intersection							
Int Delay, s/veh	1.1						
Movement	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations	↑	↑↑↑			↑↑↑		
Traffic Vol, veh/h	4	4	2609	5	8	2461	
Future Vol, veh/h	4	4	2609	5	8	2461	
Conflicting Peds, #/hr	0	0	0	0	0	0	
Sign Control	Stop	Stop	Free	Free	Free	Free	
RT Channelized	-	None	-	None	-	None	
Storage Length	0	-	-	-	125	-	
Veh in Median Storage, #	0	-	0	-	-	0	
Grade, %	0	-	0	-	-	0	
Peak Hour Factor	92	92	92	92	92	92	
Heavy Vehicles, %	2	2	2	2	2	2	
Mvmt Flow	4	4	2836	5	9	2675	
Major/Minor							
Minor1		Major1		Major2			
Conflicting Flow All	3927	1421	0	0	2841	0	
Stage 1	2839	-	-	-	-	-	
Stage 2	1088	-	-	-	-	-	
Critical Hdwy	5.74	7.14	-	-	5.34	-	
Critical Hdwy Stg 1	6.64	-	-	-	-	-	
Critical Hdwy Stg 2	6.04	-	-	-	-	-	
Follow-up Hdwy	3.82	3.92	-	-	3.12	-	
Pot Cap-1 Maneuver	8	108	-	-	46	-	
Stage 1	16	-	-	-	-	-	
Stage 2	256	-	-	-	-	-	
Platoon blocked, %	-	-	-	-	-	-	
Mov Cap-1 Maneuver	6	108	-	-	46	-	
Mov Cap-2 Maneuver	6	-	-	-	-	-	
Stage 1	16	-	-	-	-	-	
Stage 2	206	-	-	-	-	-	
Approach							
WB	NB	SB					
HCM Control Delay, \$	629.6	0	0.3				
HCM LOS	F						
Minor Lane/Major Mvmt							
Capacity (veh/h)	-	-	11	46	-	-	
HCM Lane V/C Ratio	-	-	0.791	0.189	-	-	
HCM Control Delay (s)	-	-	\$ 629.6	100.7	-	-	
HCM Lane LOS	-	-	F	F	-	-	
HCM 95th %tile Q(veh)	-	-	1.7	0.6	-	-	
Notes							
-: Volume exceeds capacity	\$: Delay exceeds 300s	+:	Computation Not Defined	*	All major volume in platoon		

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HCM 6th TWSC
21:

11/04/2020

Intersection							
Int Delay, s/veh	0.3						
Movement	EBT	EBC	WBL	WBT	NBL	NBR	
Lane Configurations	↑↑		↑↑		↑		
Traffic Vol, veh/h	271	1	0	375	0	22	
Future Vol, veh/h	271	1	0	375	0	22	
Conflicting Peds, #/hr	0	0	0	0	0	0	
Sign Control	Free	Free	Free	Free	Stop	Stop	
RT Channelized	-	None	-	None	-	None	
Storage Length	-	-	-	-	-	0	
Veh in Median Storage, #	0	-	-	0	0	-	
Grade, %	0	-	-	0	0	-	
Peak Hour Factor	92	92	92	92	92	92	
Heavy Vehicles, %	2	2	2	2	2	2	
Mvmt Flow	295	1	0	408	0	24	
Major/Minor							
Major1		Major2		Minor1			
Conflicting Flow All	0	0	-	-	-	148	
Stage 1	-	-	-	-	-	-	
Stage 2	-	-	-	-	-	-	
Critical Hdwy	-	-	-	-	-	6.94	
Critical Hdwy Stg 1	-	-	-	-	-	-	
Critical Hdwy Stg 2	-	-	-	-	-	-	
Follow-up Hdwy	-	-	-	-	-	3.32	
Pot Cap-1 Maneuver	-	-	0	-	0	872	
Stage 1	-	-	0	-	0	-	
Stage 2	-	-	0	-	0	-	
Platoon blocked, %	-	-	-	-	-	-	
Mov Cap-1 Maneuver	-	-	-	-	-	872	
Mov Cap-2 Maneuver	-	-	-	-	-	-	
Stage 1	-	-	-	-	-	-	
Stage 2	-	-	-	-	-	-	
Approach							
EB	WB	NB					
HCM Control Delay, s	0	0	9.2				
HCM LOS			A				
Minor Lane/Major Mvmt							
NBLn1		EBT		WBT			
Capacity (veh/h)	872	-	-	-	-	-	
HCM Lane V/C Ratio	0.027	-	-	-	-	-	
HCM Control Delay (s)	9.2	-	-	-	-	-	
HCM Lane LOS	A	-	-	-	-	-	
HCM 95th %tile Q(veh)	0.1	-	-	-	-	-	

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HCM 6th TWSC
37: 6750 North & Street C

11/04/2020

Intersection												
Int Delay, s/veh	14.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↓	↑	↓	↑	↓	↑	↓	↑	↓	↑	↓
Traffic Vol, veh/h	7	33	1	2	35	52	1	279	2	54	367	8
Future Vol, veh/h	7	33	1	2	35	52	1	279	2	54	367	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	None	-	-	None	-	-	None	-
Storage Length	100	-	100	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	0	-	-
Grade, %	-	0	-	-	0	-	-	0	-	0	-	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	36	1	2	38	57	1	303	2	59	399	9
Major/Minor												
Major/Minor	Major1	Major2	Minor1	Minor2								
Conflicting Flow All	95	0	0	37	0	0	328	152	37	276	124	67
Stage 1	-	-	-	-	-	-	53	53	-	71	71	-
Stage 2	-	-	-	-	-	-	275	99	-	205	53	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1499	-	-	1574	-	-	625	740	1035	676	766	997
Stage 1	-	-	-	-	-	-	960	851	-	939	836	-
Stage 2	-	-	-	-	-	-	731	813	-	797	851	-
Platoon blocked, %	-	-	-	-	-	-						
Mov Cap-1 Maneuver	1499	-	-	1574	-	-	362	736	1035	456	761	997
Mov Cap-2 Maneuver	-	-	-	-	-	-	362	736	-	456	761	-
Stage 1	-	-	-	-	-	-	955	847	-	934	835	-
Stage 2	-	-	-	-	-	-	378	812	-	508	847	-
Approach												
Approach	EB	WB	NB	SB								
HCM Control Delay, s	1.3	0.2			13.4		19.5					
HCM LOS			B			C						
Minor Lane/Major Mvmt												
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	735	1499	-	-	1574	-	-	705				
HCM Lane V/C Ratio	0.417	0.005	-	-	0.001	-	-	0.661				
HCM Control Delay (s)	13.4	7.4	-	-	7.3	-	-	19.5				
HCM Lane LOS	B	A	-	-	A	-	-	C				
HCM 95th %tile Q(veh)	2.1	0	-	-	0	-	-	5				

HCM 6th Roundabout
3: Indian Bend Rd. & Scottsdale Plaza Resort

11/04/2020

Intersection			
Intersection Delay, s/veh	7.6	Intersection LOS	A
Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	257	694	315
Demand Flow Rate, veh/h	262	707	321
Vehicles Circulating, veh/h	420	24	245
Vehicles Exiting, veh/h	299	542	437
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	7.2	8.3	6.4
Approach LOS	A	A	A
Lane	Left	Left	Left
Designated Moves	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	262	707	321
Cap Entry Lane, veh/h	899	1346	1075
Entry HV Adj Factor	0.982	0.981	0.981
Flow Entry, veh/h	257	694	315
Cap Entry, veh/h	883	1321	1055
V/C Ratio	0.291	0.525	0.299
Control Delay, s/veh	7.2	8.3	6.4
LOS	A	A	A
95th %tile Queue, veh	1	3	1

HCM 6th TWSC
5: Scottsdale Rd & Joshua Tree Ln

11/04/2020

Intersection						
Int Delay, s/veh 1.6						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		↑↑↑		Y	↑↑↑
Traffic Vol, veh/h	5	5	2642	6	9	2275
Future Vol, veh/h	5	5	2642	6	9	2275
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	150	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	5	2872	7	10	2473
Major/Minor		Minor1	Major1	Major2		
Conflicting Flow All	3885	1440	0	0	2879	0
Stage 1	2876	-	-	-	-	-
Stage 2	1009	-	-	-	-	-
Critical Hdwy	5.74	7.14	-	-	5.34	-
Critical Hdwy Stg 1	6.64	-	-	-	-	-
Critical Hdwy Stg 2	6.04	-	-	-	-	-
Follow-up Hdwy	3.82	3.92	-	-	3.12	-
Pot Cap-1 Maneuver	8	105	-	-	44	-
Stage 1	15	-	-	-	-	-
Stage 2	282	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	6	105	-	-	44	-
Mov Cap-2 Maneuver	6	-	-	-	-	-
Stage 1	15	-	-	-	-	-
Stage 2	218	-	-	-	-	-
Approach		WB	NB	SB		
HCM Control Delay, \$§	711.1	0	0.4			
HCM LOS	F					
Minor Lane/Major Mvmt		NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	11	44	-	-
HCM Lane V/C Ratio	-	-	0.988	0.222	-	-
HCM Control Delay (s)	-	-	\$ 711.1	108.8	-	-
HCM Lane LOS	-	-	F	F	-	-
HCM 95th %tile Q(veh)	-	-	2	0.7	-	-
Notes						
-: Volume exceeds capacity	\$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon			

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Timings
6: Scottsdale Rd & 6750 North

11/04/2020

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y	Y	Y	↑↑↑	↑↑↑	Y
Traffic Volume (vph)	159	208	160	2484	2303	43
Future Volume (vph)	159	208	160	2484	2303	43
Turn Type	Prot	pm+ov	Prot	NA	NA	Perm
Protected Phases	4	5	5	2	6	
Permitted Phases						6
Detector Phase	4	5	5	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	4.0	4.0	10.0	10.0	10.0
Minimum Split (s)	36.2	8.0	8.0	36.0	36.9	36.9
Total Split (s)	24.0	24.0	24.0	96.0	72.0	72.0
Total Split (%)	20.0%	20.0%	20.0%	80.0%	60.0%	60.0%
Yellow Time (s)	3.0	3.5	3.5	4.9	4.9	4.9
All-Red Time (s)	3.0	0.5	0.5	1.1	1.1	1.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	4.0	4.0	6.0	6.0	6.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	C-Max	C-Max	C-Max
Act Effct Green (s)	10.4	36.4	20.0	97.6	73.6	73.6
Actuated g/C Ratio	0.09	0.30	0.17	0.81	0.61	0.61
v/c Ratio	0.58	0.47	0.30	0.65	0.80	0.05
Control Delay	60.4	36.9	54.4	9.5	28.2	12.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.4	36.9	54.4	9.5	28.2	12.8
LOS	E	D	D	A	C	B
Approach Delay	47.1			12.2	27.9	
Approach LOS	D			B	C	
Intersection Summary						
Cycle Length: 120						
Actuated Cycle Length: 120						
Offset: 0 (0%) Referenced to phase 2:NBT and 6:SBT, Start of Green						
Natural Cycle: 95						
Control Type: Actuated-Coordinated						
Maximum v/c Ratio: 0.80						
Intersection Signal Delay: 21.5					Intersection LOS: C	
Intersection Capacity Utilization 66.9%					ICU Level of Service C	
Analysis Period (min) 15						
Splits and Phases: 6: Scottsdale Rd & 6750 North						

Scenario 1 Palmaire 12:00 am 10/29/2020 Total 2023 PM - Addendum Mitigated
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HCM 6th Signalized Intersection Summary

6: Scottsdale Rd & 6750 North

11/04/2020

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↑	↑	↑	↑↑↑	↑↑↑	↑
Traffic Volume (veh/h)	159	208	160	2484	2303	43
Future Volume (veh/h)	159	208	160	2484	2303	43
Initial Q (Ob), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	
Work Zone On Approach	No		No	No		
Adj Sat Flow, veh/h/in	1870	1870	1870	1870	1870	
Adj Flow Rate, veh/h	173	226	174	2700	2503	47
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	0	0	1209	4851	2808	872
Arrive On Green	0.00	0.00	0.47	1.00	0.55	0.55
Sat Flow, veh/h	0	3456	5274	5274	1585	
Grp Volume(v), veh/h	0.0		174	2700	2503	47
Grp Sat Flow(s), veh/h/in		1728	1702	1702	1585	
O Serve(g_s), s	3.5	0.0	51.9	1.7		
CycI Q Clear(g_c), s	3.5	0.0	51.9	1.7		
Prop In Lane	1.00			1.00		
Lane Grp Cap(c), veh/h	1209	4851	2808	872		
V/C Ratio(X)	0.14	0.56	0.89	0.05		
Avail Cap(c_a), veh/h	1209	4851	2808	872		
HCM Platoon Ratio	1.33	1.33	1.00	1.00		
Upstream Filter(l)	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	21.8	0.0	23.8	12.5		
Incr Delay (d2), s/veh	0.1	0.5	4.8	0.1		
Initial O Delay(d3), s/veh	0.0	0.0	0.0	0.0		
%ile BackOf(50%), veh/in	1.4	0.2	21.1	0.6		
Unsig. Movement Delay, s/veh						
LnGp Delay(d), s/veh	21.8	0.5	28.6	12.6		
LnGp LOS	C	A	C	B		
Approach Vol, veh/h		2874	2550			
Approach Delay, s/veh		1.8	28.3			
Approach LOS		A	C			
Timer - Assigned Phs	2		5	6		
Phs Duration (G+Y+Rc), s	120.0		48.0	72.0		
Change Period (Y+Rc), s	* 6		* 6	* 6		
Max Green Setting (Gmax), s	* 90		* 20	* 66		
Max O Clear Time (g_c+1), s	2.0		5.5	53.9		
Green Ext Time (p_c), s	7.6		0.5	4.9		
Intersection Summary						
HCM 6th Ctrl Delay		14.2				
HCM 6th LOS		B				
Notes						

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Timings

10: Quail Run Road & Lincoln Dr

11/04/2020

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	↑	↑↑	↑	↑↑	↑	↑	↑	↑	↑
Traffic Volume (vph)	241	549	5	936	9	5	0	6	0
Future Volume (vph)	241	549	5	936	9	5	0	6	0
Turn Type	pm+pt	NA	Perm	NA	Perm	Perm	NA	Perm	NA
Protected Phases	7	4			8		2		6
Permitted Phases	4				8	2		6	
Detector Phase	7	4	8	8	8	2	2	6	6
Switch Phase									
Minimum Initial (s)	4.0	15.0	15.0	15.0	15.0	7.0	7.0	7.0	7.0
Minimum Split (s)	8.0	28.0	28.0	28.0	33.0	33.0	33.0	33.0	33.0
Total Split (s)	20.0	97.0	77.0	77.0	33.0	33.0	33.0	33.0	33.0
Total Split (%)	15.4%	74.6%	59.2%	59.2%	59.2%	25.4%	25.4%	25.4%	25.4%
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	4.5	4.5	4.5	4.5
All-Red Time (s)	1.0	2.5	2.5	2.5	1.5	1.5	1.5	1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.5	6.5	6.5	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lag					
Lead-Lag Optimize?	Yes		Yes	Yes					
Recall Mode	None	C-Max	C-Max	C-Max	C-Max	None	None	None	None
Act Effct Green (s)	110.8	108.3	95.2	95.2	95.2	9.2	9.2	9.2	9.2
Actuated Cycle Length: 130									
Offset: 0 (0%) Referenced to phase 4:EBTL and 8:WBTL, Start of Green									
Natural Cycle: 75									
Control Type: Actuated-Coordinated									
Maximum v/c Ratio: 0.74									
Intersection Signal Delay: 7.5									
Intersection LOS: A									
ICU Level of Service C									
Analysis Period (min) 15									
Splits and Phases: 10: Quail Run Road & Lincoln Dr									
	↑ 02		↑ 04 (R)						
	33 s	97 s							
	↓ 06		↑ 07		↓ 08 (R)				
	33 s	20 s	77 s						

HCM 6th TWSC
15: Scottsdale Rd & Street B (Access B)

11/04/2020

Intersection						
Int Delay, s/veh	1.2					
Movement	EBL	EBC	NBL	NBT	SBT	SBR
Lane Configurations		↑	↑↑↑	↑↑↑		
Traffic Vol, veh/h	0	114	0	2672	1785	129
Future Vol, veh/h	0	114	0	2672	1785	129
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	124	0	2904	1940	140
Major/Minor						
Minor2		Major1		Major2		
Conflicting Flow All	-	1040	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	-	-	-	-
Pot Cap-1 Maneuver	0	195	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	195	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach						
EB		NB		SB		
HCM Control Delay, s	51	0	0			
HCM LOS	F					
Minor Lane/Major Mvmt						
NBT		EBLn1		SBT		
Capacity (veh/h)	-	195	-	-		
HCM Lane V/C Ratio	-	0.635	-	-		
HCM Control Delay (s)	-	51	-	-		
HCM Lane LOS	-	F	-	-		
HCM 95th %tile Q(veh)	-	3.7	-	-		

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HCM 6th TWSC
16: Scottsdale Rd & Tuckey Ln

11/04/2020

Intersection						
Int Delay, s/veh	1.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↑	4	↑↑↑	5	8	2461
Traffic Vol, veh/h	4	4	2609	5	8	2461
Future Vol, veh/h	4	4	2609	5	8	2461
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	125	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	4	2836	5	9	2675
Major/Minor						
Minor1		Major1		Major2		
Conflicting Flow All	3927	1421	0	0	2841	0
Stage 1	2839	-	-	-	-	-
Stage 2	1088	-	-	-	-	-
Critical Hdwy	5.74	7.14	-	-	5.34	-
Critical Hdwy Stg 1	6.64	-	-	-	-	-
Critical Hdwy Stg 2	6.04	-	-	-	-	-
Follow-up Hdwy	3.82	3.92	-	-	3.12	-
Pot Cap-1 Maneuver	8	108	-	-	46	-
Stage 1	16	-	-	-	-	-
Stage 2	256	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	6	108	-	-	46	-
Mov Cap-2 Maneuver	6	-	-	-	-	-
Stage 1	16	-	-	-	-	-
Stage 2	206	-	-	-	-	-
Approach						
WB		NB		SB		
HCM Control Delay, \$s	\$ 629.6		0		0.3	
HCM LOS	F					
Minor Lane/Major Mvmt						
NBT		NBRWLn1		SBL		
Capacity (veh/h)	-	-	11	46	-	-
HCM Lane V/C Ratio	-	-	0.791	0.189	-	-
HCM Control Delay (s)	-	-	\$ 629.6	100.7	-	-
HCM Lane LOS	-	-	F	F	-	-
HCM 95th %tile Q(veh)	-	-	1.7	0.6	-	-

Notes
-: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

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HCM 6th TWSC

21:

11/04/2020

Intersection

Int Delay, s/veh 0.3

Movement EBT EBR WBL WBT NBL NBR

Lane Configurations ↑↑ ↑ ↑ ↗

Traffic Vol, veh/h 271 1 0 375 0 22

Future Vol, veh/h 271 1 0 375 0 22

Conflicting Peds, #/hr 0 0 0 0 0 0

Sign Control Free Free Free Free Stop Stop

RT Channelized - None - None - None

Storage Length - - - - - 0

Veh in Median Storage, # 0 - - 0 0 -

Grade, % 0 - - 0 0 -

Peak Hour Factor 92 92 92 92 92 92

Heavy Vehicles, % 2 2 2 2 2 2

Mvmt Flow 295 1 0 408 0 24

Major/Minor Major1 Major2 Minor1

Conflicting Flow All 0 0 - - - 148

Stage 1 - - - - - -

Stage 2 - - - - - -

Critical Hdwy - - - - - 6.94

Critical Hdwy Stg 1 - - - - - -

Critical Hdwy Stg 2 - - - - - -

Follow-up Hdwy - - - - - 3.32

Pot Cap-1 Maneuver - - 0 - 0 872

Stage 1 - - 0 - 0 -

Stage 2 - - 0 - 0 -

Platoon blocked, % - - -

Mov Cap-1 Maneuver - - - - - 872

Mov Cap-2 Maneuver - - - - - -

Stage 1 - - - - - -

Stage 2 - - - - - -

Approach EB WB NB

HCM Control Delay, s 0 0 9.2

HCM LOS A

Minor Lane/Major Mvmt NBLn1 EBT EBR WBT

Capacity (veh/h) 872 - - -

HCM Lane V/C Ratio 0.027 - - -

HCM Control Delay (s) 9.2 - - -

HCM Lane LOS A - - -

HCM 95th %tile Q(veh) 0.1 - - -

HCM 6th TWSC

37: 6750 North & Street C

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Intersection

Int Delay, s/veh 14.5

Movement EBL EBT EBR WBL WBT WBR NBL NBT NBR SBL SBT SBR

Lane Configurations ↗ ↑ ↑ ↗ ↗ ↗ ↗ ↗ ↗ ↗ ↗ ↗

Traffic Vol, veh/h 7 33 1 2 35 52 1 279 2 54 367 8

Future Vol, veh/h 7 33 1 2 35 52 1 279 2 54 367 8

Conflicting Peds, #/hr 0 0 0 0 0 0 0 0 0 0 0 0

Sign Control Free Free Free Free Free Stop Stop Stop Stop Stop Stop

RT Channelized - None - None - None - None - None - None

Storage Length 100 - - 100 - - - - - -

Veh in Median Storage, # - 0 - - 0 - - 0 - - 0

Grade, % - 0 - - 0 - - 0 - - 0

Peak Hour Factor 92 92 92 92 92 92 92 92 92 92 92 92

Heavy Vehicles, % 2 2 2 2 2 2 2 2 2 2 2 2

Mvmt Flow 8 36 1 2 38 57 1 303 2 59 399 9

Major/Minor Major1 Major2 Minor1 Minor2

Conflicting Flow All 95 0 0 37 0 0 328 152 37 276 124 67

Stage 1 - - - - - - 53 53 - 71 71 -

Stage 2 - - - - - - 275 99 - 205 53 -

Critical Hdwy 4.12 - - 4.12 - 7.12 6.52 6.22 7.12 6.52 6.22

Critical Hdwy Stg 1 - - - - - - 6.12 5.52 - 6.12 5.52 -

Critical Hdwy Stg 2 - - - - - - 6.12 5.52 - 6.12 5.52 -

Follow-up Hdwy 2.218 - - 2.218 - 3.518 4.018 3.318 3.518 4.018 3.318

Pot Cap-1 Maneuver 1499 - - 1574 - - 625 740 1035 676 766 997

Stage 1 - - - - - - 960 851 - 939 836 -

Stage 2 - - - - - - 731 813 - 797 851 -

Platoon blocked, % - - -

Mov Cap-1 Maneuver 1499 - - 1574 - - 362 736 1035 456 761 997

Mov Cap-2 Maneuver - - - - - - 362 736 - 456 761 -

Stage 1 - - - - - - 955 847 - 934 835 -

Stage 2 - - - - - - 378 812 - 508 847 -

Approach EB WB NB SB

HCM Control Delay, s 1.3 0.2 13.4 19.5

HCM LOS B C

Minor Lane/Major Mvmt NBLn1 EBL EBT EBR WBL WBT WBR SBLn1

Capacity (veh/h) 735 1499 - - 1574 - - 705

HCM Lane V/C Ratio 0.417 0.005 - - 0.001 - - 0.661

HCM Control Delay (s) 13.4 7.4 - - 7.3 - - 19.5

HCM Lane LOS B A - - A - - C

HCM 95th %tile Q(veh) 2.1 0 - - 0 - - 5

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Timings
6: Scottsdale Rd & 6750 North

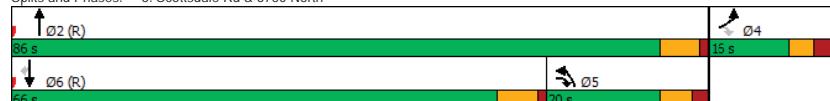
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Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↑	↑	↑	↑↑↑	↑↑↑	↑
Traffic Volume (vph)	114	195	198	2115	2128	45
Future Volume (vph)	114	195	198	2115	2128	45
Turn Type	Prot	pm+ov	Prot	NA	NA	Perm
Protected Phases	4	5	5	2	6	
Permitted Phases						6
Detector Phase	4	5	5	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	4.0	4.0	10.0	10.0	10.0
Minimum Split (s)	36.2	10.0	10.0	36.0	36.9	36.9
Total Split (s)	16.0	20.0	20.0	86.0	66.0	66.0
Total Split (%)	15.7%	19.6%	19.6%	84.3%	64.7%	64.7%
Yellow Time (s)	3.0	4.0	4.0	4.9	4.9	4.9
All-Red Time (s)	3.0	2.0	2.0	1.1	1.1	1.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lag	Lag		Lead	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	C-Max	C-Max	C-Max
Act Effct Green (s)	8.0	28.0	14.0	82.0	62.0	62.0
Actuated g/C Ratio	0.08	0.27	0.14	0.80	0.61	0.61
v/c Ratio	0.46	0.49	0.46	0.56	0.75	0.05
Control Delay	50.3	34.2	35.1	1.1	15.3	3.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.3	34.2	35.1	1.1	15.3	3.9
LOS	D	C	D	A	B	A
Approach Delay	40.1			4.0	15.1	
Approach LOS	D			A	B	

Intersection Summary

Cycle Length: 102
 Actuated Cycle Length: 102
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 95
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.75
 Intersection Signal Delay: 11.4
 Intersection LOS: B
 Intersection Capacity Utilization 65.9%
 ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 6: Scottsdale Rd & 6750 North



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HCM 6th Signalized Intersection Summary
6: Scottsdale Rd & 6750 North

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Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↑	↑	↑	↑↑↑	↑↑↑	↑
Traffic Volume (veh/h)	114	195	198	2115	2128	45
Future Volume (veh/h)	114	195	198	2115	2128	45
Initial Q (Q _b) veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No	No		
Adj Sat Flow, veh/h/in	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	124	212	215	2299	2313	49
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	0	0	1016	4806	3004	932
Arrive On Green	0.00	0.00	0.59	1.00	1.00	1.00
Sat Flow, veh/h	0		3456	5274	5274	1585
Grp Volume(v), veh/h	0.0		215	2299	2313	49
Grp Sat Flow(s), veh/h/in			1728	1702	1702	1585
Q Serve(g_s), s			3.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s			3.0	0.0	0.0	0.0
Prop In Lane			1.00			1.00
Lane Grp Cap(c), veh/h			1016	4806	3004	932
V/C Ratio(X)			0.21	0.48	0.77	0.05
Avail Cap(c_a), veh/h			1016	4806	3004	932
HCM Platooning Ratio			2.00	2.00	2.00	2.00
Upstream Filter(l)			1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh			15.4	0.0	0.0	0.0
Incr Delay (d2), s/veh			0.1	0.3	2.0	0.1
Initial Q Delay(d3), s/veh			0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/in			1.1	0.2	0.5	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh			15.5	0.3	2.0	0.1
LnGrp LOS			B	A	A	A
Approach Vol, veh/h				2514	2362	
Approach Delay, s/veh				1.6	1.9	
Approach LOS				A	A	
Timer - Assigned Phs			2		5	6
Ph Duration (G+Y+R _c), s			102.0		36.0	66.0
Change Period (Y+R _c), s			* 6		* 6	6.0
Max Green Setting (Gmax), s			* 80		* 14	60.0
Max Q Clear Time (g _c +11), s			2.0		5.0	2.0
Green Ext Time (p _c), s			5.4		0.5	5.5
Intersection Summary						
HCM 6th Ctrl Delay					1.8	
HCM 6th LOS					A	
Notes						
User approved pedestrian interval to be less than phase max green.						
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.						

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HCM 6th TWSC
14: Street A (Access A) & Indian Bend Rd.

11/04/2020

Intersection						
Int Delay, s/veh						
Movement	EBT	EBC	WBL	WBT	NBL	NBR
Lane Configurations	↑↓		↑↓	↑↓		
Traffic Vol, veh/h	17	87	129	15	82	120
Future Vol, veh/h	17	87	129	15	82	120
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	18	95	140	16	89	130
Major/Minor						
Major1		Major2		Minor1		
Conflicting Flow All	0	0	113	0	362	66
Stage 1	-	-	-	-	66	-
Stage 2	-	-	-	-	296	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1476	-	637	998
Stage 1	-	-	-	-	957	-
Stage 2	-	-	-	-	755	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1476	-	576	998
Mov Cap-2 Maneuver	-	-	-	-	576	-
Stage 1	-	-	-	-	957	-
Stage 2	-	-	-	-	683	-
Approach						
EB		WB		NB		
HCM Control Delay, s	0	6.9		10.4		
HCM LOS				B		
Minor Lane/Major Mvmt						
NBLn1		NBLn2		EBT		
Capacity (veh/h)	576	998	-	-	1476	-
HCM Lane V/C Ratio	0.155	0.131	-	-	0.095	-
HCM Control Delay (s)	12.4	9.1	-	-	7.7	0
HCM Lane LOS	B	A	-	-	A	A
HCM 95th %tile Q(veh)	0.5	0.4	-	-	0.3	-

HCM 6th TWSC
15: Scottsdale Rd & Street B (Access B)

11/04/2020

Intersection						
Int Delay, s/veh						
Movement	EBL	EBC	NBL	NBT	SBT	SBR
Lane Configurations	↑		↑↑↑	↑↑↑		
Traffic Vol, veh/h	0	97	0	388	197	132
Future Vol, veh/h	0	97	0	388	197	132
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	105	0	422	214	143
Major/Minor						
Minor2		Major1		Major2		
Conflicting Flow All	-	179	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	-	-	-	-
Pot Cap-1 Maneuver	0	709	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	709	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach						
EB		NB		SB		
HCM Control Delay, s	11	0		0		
HCM LOS	B					
Minor Lane/Major Mvmt						
NBT		EBLn1		SBT		
Capacity (veh/h)	-	709	-	-	-	-
HCM Lane V/C Ratio	-	0.149	-	-	-	-
HCM Control Delay (s)	-	11	-	-	-	-
HCM Lane LOS	-	B	-	-	-	-
HCM 95th %tile Q(veh)	-	0.5	-	-	-	-

HCM 6th TWSC
16: Scottsdale Rd & Tuckey Ln

11/04/2020

Intersection						
Int Delay, s/veh	1.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		↑↑↑		Y	↑↑↑
Traffic Vol, veh/h	8	8	2292	0	3	2328
Future Vol, veh/h	8	8	2292	0	3	2328
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	125	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	9	2491	0	3	2530
Major/Minor						
Minor1		Major1		Major2		
Conflicting Flow All	3509	1246	0	0	2491	0
Stage 1	2491	-	-	-	-	-
Stage 2	1018	-	-	-	-	-
Critical Hdwy	5.74	7.14	-	-	5.34	-
Critical Hdwy Stg 1	6.64	-	-	-	-	-
Critical Hdwy Stg 2	6.04	-	-	-	-	-
Follow-up Hdwy	3.82	3.92	-	-	3.12	-
Pot Cap-1 Maneuver	13	142	-	-	70	-
Stage 1	27	-	-	-	-	-
Stage 2	279	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	12	142	-	-	70	-
Mov Cap-2 Maneuver	12	-	-	-	-	-
Stage 1	27	-	-	-	-	-
Stage 2	267	-	-	-	-	-
Approach						
WB		NB		SB		
HCM Control Delay, \$	\$ 367.3	0	0.1			
HCM LOS	F					
Minor Lane/Major Mvmt						
NBT		NBR		WBLn1		
Capacity (veh/h)	-	-	22	70	-	-
HCM Lane V/C Ratio	-	-	0.791	0.047	-	-
HCM Control Delay (s)	-	-	\$ 367.3	58.9	-	-
HCM Lane LOS	-	-	F	F	-	-
HCM 95th %tile Q(veh)	-	-	2.3	0.1	-	-
Notes						
-: Volume exceeds capacity	\$: Delay exceeds 300s	+:	Computation Not Defined	*	All major volume in platoon	

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HCM 6th TWSC
21:

11/04/2020

Intersection						
Int Delay, s/veh	0.2					
Movement	EBT	EBC	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑		↑
Traffic Vol, veh/h	264	1	0	370	0	17
Future Vol, veh/h	264	1	0	370	0	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	287	1	0	402	0	18
Major/Minor						
Major1		Major2		Minor1		
Conflicting Flow All	0	0	-	-	-	144
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	-	-	0	-	0	877
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	-	877
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach						
EB		WB		NB		
HCM Control Delay, \$	0	0	0	9.2		
HCM LOS	A					
Minor Lane/Major Mvmt						
NBLn1		EBT		WBT		
Capacity (veh/h)	877	-	-	-	-	-
HCM Lane V/C Ratio	0.021	-	-	-	-	-
HCM Control Delay (s)	9.2	-	-	-	-	-
HCM Lane LOS	A	-	-	-	-	-
HCM 95th %tile Q(veh)	0.1	-	-	-	-	-

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HCM 6th TWSC
37: 6750 North & Street C

11/04/2020

Intersection												
Int Delay, s/veh	18.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↓	↑	↓	↑	↓	↑	↓	↑	↓	↑	↓
Traffic Vol, veh/h	11	45	2	4	54	82	1	269	3	73	370	10
Future Vol, veh/h	11	45	2	4	54	82	1	269	3	73	370	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	None	-	-	None	-	-	None	-
Storage Length	100	-	100	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	0	0	-
Grade, %	-	0	-	-	0	-	-	0	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	49	2	4	59	89	1	292	3	79	402	11
Major/Minor												
Major/Minor	Major1	Major2	Minor1	Minor2								
Conflicting Flow All	148	0	0	51	0	0	392	230	50	334	187	104
Stage 1	-	-	-	-	-	-	74	74	-	112	112	-
Stage 2	-	-	-	-	-	-	318	156	-	222	75	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1434	-	-	1555	-	-	567	670	1018	620	708	951
Stage 1	-	-	-	-	-	-	935	833	-	893	803	-
Stage 2	-	-	-	-	-	-	693	769	-	780	833	-
Platoon blocked, %	-	-	-	-	-	-						
Mov Cap-1 Maneuver	1434	-	-	1555	-	-	303	663	1018	402	700	951
Mov Cap-2 Maneuver	-	-	-	-	-	-	303	663	-	402	700	-
Stage 1	-	-	-	-	-	-	928	826	-	886	801	-
Stage 2	-	-	-	-	-	-	340	767	-	498	826	-
Approach	EB	WB	NB	SB								
HCM Control Delay, s	1.4	0.2	14.8	28.2								
HCM LOS		B	D									
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	663	1434	-	-	1555	-	-	629				
HCM Lane V/C Ratio	0.448	0.008	-	-	0.003	-	-	0.783				
HCM Control Delay (s)	14.8	7.5	-	-	7.3	-	-	28.2				
HCM Lane LOS	B	A	-	-	A	-	-	D				
HCM 95th %tile Q(veh)	2.3	0	-	-	0	-	-	7.5				

HCM 6th Roundabout
3: Indian Bend Rd. & Scottsdale Plaza Resort

11/04/2020

Intersection			
Intersection Delay, s/veh	7.8		
Intersection LOS	A		
Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	286	701	305
Demand Flow Rate, veh/h	291	715	311
Vehicles Circulating, veh/h	419	20	279
Vehicles Exiting, veh/h	314	570	431
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	7.6	8.4	6.5
Approach LOS	A	A	A
Lane	Left	Left	Left
Designated Moves	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	291	715	311
Cap Entry Lane, veh/h	900	1352	1038
Entry HV Adj Factor	0.982	0.981	0.981
Flow Entry, veh/h	286	701	305
Cap Entry, veh/h	884	1326	1018
V/C Ratio	0.323	0.529	0.300
Control Delay, s/veh	7.6	8.4	6.5
LOS	A	A	A
95th %tile Queue, veh	1	3	1

HCM 6th TWSC
5: Scottsdale Rd & Joshua Tree Ln

11/04/2020

Intersection						
Int Delay, s/veh 0.6						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		↑↑↑		Y	↑↑↑
Traffic Vol, veh/h	4	10	2257	7	6	2115
Future Vol, veh/h	4	10	2257	7	6	2115
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	11	2453	8	7	2299
Major/Minor						
Minor1		Major1	Major2			
Conflicting Flow All	3391	1231	0	0	2461	0
Stage 1	2457	-	-	-	-	-
Stage 2	934	-	-	-	-	-
Critical Hdwy	5.74	7.14	-	-	5.34	-
Critical Hdwy Stg 1	6.64	-	-	-	-	-
Critical Hdwy Stg 2	6.04	-	-	-	-	-
Follow-up Hdwy	3.82	3.92	-	-	3.12	-
Pot Cap-1 Maneuver	16	145	-	-	73	-
Stage 1	29	-	-	-	-	-
Stage 2	310	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	14	145	-	-	73	-
Mov Cap-2 Maneuver	14	-	-	-	-	-
Stage 1	29	-	-	-	-	-
Stage 2	280	-	-	-	-	-
Approach						
WB		NB	SB			
HCM Control Delay, s	147.3	-	0	0.2	-	-
HCM LOS	F	-	-	-	-	-
Minor Lane/Major Mvmt						
NBT		NBR	WBLn1	SBL	SBT	
Capacity (veh/h)	-	-	39	73	-	-
HCM Lane V/C Ratio	-	-	0.39	0.089	-	-
HCM Control Delay (s)	-	-	147.3	59.1	-	-
HCM Lane LOS	-	-	F	F	-	-
HCM 95th %tile Q(veh)	-	-	1.3	0.3	-	-

Scenario 1 Palmerale 12:00 am 10/29/2020 Total 2023 Sat - Addendum Mitigated
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Timings
6: Scottsdale Rd & 6750 North

11/04/2020

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y	Y	Y	↑↑↑	↑↑↑	Y
Traffic Volume (vph)	114	195	198	2115	2128	45
Future Volume (vph)	114	195	198	2115	2128	45
Turn Type	Prot	pm+ov	Prot	NA	NA	Perm
Protected Phases	4	5	5	2	6	
Permitted Phases						6
Detector Phase	4	5	5	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	4.0	4.0	10.0	10.0	10.0
Minimum Split (s)	36.2	10.0	10.0	36.0	36.9	36.9
Total Split (s)	16.0	20.0	20.0	86.0	66.0	66.0
Total Split (%)	15.7%	19.6%	19.6%	84.3%	64.7%	64.7%
Yellow Time (s)	3.0	4.0	4.0	4.9	4.9	4.9
All-Red Time (s)	3.0	2.0	2.0	1.1	1.1	1.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	C-Max	C-Max	C-Max
Act Effct Green (s)	8.0	28.0	14.0	82.0	62.0	62.0
Actuated g/C Ratio	0.08	0.27	0.14	0.80	0.61	0.61
v/c Ratio	0.46	0.49	0.46	0.56	0.75	0.05
Control Delay	50.3	34.2	33.7	0.8	15.4	3.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.3	34.2	33.7	0.8	15.4	3.9
LOS	D	C	C	A	B	A
Approach Delay	40.1	-	-	3.7	15.1	-
Approach LOS	D	-	-	A	B	-
Intersection Summary						
Cycle Length: 102						
Actuated Cycle Length: 102						
Offset: 0 (0%) Referenced to phase 2:NBT and 6:SBT, Start of Green						
Natural Cycle: 95						
Control Type: Actuated-Coordinated						
Maximum v/c Ratio: 0.75						
Intersection Signal Delay: 11.2					Intersection LOS: B	
Intersection Capacity Utilization 65.9%					ICU Level of Service C	
Analysis Period (min) 15						
Splits and Phases: 6: Scottsdale Rd & 6750 North						

Scenario 1 Palmerale 12:00 am 10/29/2020 Total 2023 Sat - Addendum Mitigated
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HCM 6th TWSC
15: Scottsdale Rd & Street B (Access B)

11/04/2020

Intersection						
Int Delay, s/veh	1.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↑		↑↑↑	↑↑↑		
Traffic Vol, veh/h	0	97	0	388	197	132
Future Vol, veh/h	0	97	0	388	197	132
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	105	0	422	214	143
Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	-	179	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	-	-	-	-
Pot Cap-1 Maneuver	0	709	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	709	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB	SB			
HCM Control Delay, s	11	0	0			
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR		
Capacity (veh/h)	-	709	-	-		
HCM Lane V/C Ratio	-	0.149	-	-		
HCM Control Delay (s)	-	11	-	-		
HCM Lane LOS	-	B	-	-		
HCM 95th %tile Q(veh)	-	0.5	-	-		

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HCM 6th TWSC
16: Scottsdale Rd & Tuckey Ln

11/04/2020

Intersection						
Int Delay, s/veh	1.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↑		↑↑↑	↑↑↑		
Traffic Vol, veh/h	8	8	2292	0	3	2328
Future Vol, veh/h	8	8	2292	0	3	2328
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	125	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	9	2491	0	3	2530
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	3509	1246	0	0	2491	0
Stage 1	2491	-	-	-	-	-
Stage 2	1018	-	-	-	-	-
Critical Hdwy	5.74	7.14	-	-	5.34	-
Critical Hdwy Stg 1	6.64	-	-	-	-	-
Critical Hdwy Stg 2	6.04	-	-	-	-	-
Follow-up Hdwy	3.82	3.92	-	-	3.12	-
Pot Cap-1 Maneuver	13	142	-	-	70	-
Stage 1	27	-	-	-	-	-
Stage 2	279	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	12	142	-	-	70	-
Mov Cap-2 Maneuver	12	-	-	-	-	-
Stage 1	27	-	-	-	-	-
Stage 2	267	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, \$§ 367.3		0	0.1			
HCM LOS	F					
Minor Lane/Major Mvmt	NBT	NBR	BLN1	SBL	SBT	
Capacity (veh/h)	-	-	22	70	-	-
HCM Lane V/C Ratio	-	-	0.791	0.047	-	-
HCM Control Delay (s)	-	\$ 367.3	58.9	-	-	-
HCM Lane LOS	-	-	F	F	-	-
HCM 95th %tile Q(veh)	-	-	2.3	0.1	-	-

Notes
-: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

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HCM 6th TWSC

21:

11/04/2020

Intersection

Int Delay, s/veh 0.2

Movement EBT EBR WBL WBT NBL NBR

Lane Configurations	↑↑	1	0	370	0	17
Traffic Vol, veh/h	264	1	0	370	0	17
Future Vol, veh/h	264	1	0	370	0	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	287	1	0	402	0	18

Major/Minor Major1 Major2 Minor1

Conflicting Flow All 0 0 - - - 144

Stage 1 - - - - - -

Stage 2 - - - - - -

Critical Hdwy - - - - - 6.94

Critical Hdwy Stg 1 - - - - - -

Critical Hdwy Stg 2 - - - - - -

Follow-up Hdwy - - - - - 3.32

Pot Cap-1 Maneuver - - 0 - 0 877

Stage 1 - - 0 - 0 -

Stage 2 - - 0 - 0 -

Platoon blocked, % - - - - - -

Mov Cap-1 Maneuver - - - - - 877

Mov Cap-2 Maneuver - - - - - -

Stage 1 - - - - - -

Stage 2 - - - - - -

Approach EB WB NB

HCM Control Delay, s 0 0 9.2

HCM LOS A

Minor Lane/Major Mvmt NBLn1 EBT EBR WBT

Capacity (veh/h) 877 - - -

HCM Lane V/C Ratio 0.021 - - -

HCM Control Delay (s) 9.2 - - -

HCM Lane LOS A - - -

HCM 95th %tile Q(veh) 0.1 - - -

HCM 6th TWSC

37: 6750 North & Street C

11/04/2020

Intersection

Int Delay, s/veh 18.3

Movement EBL EBT EBR WBL WBT WBR NBL NBT NBR SBL SBT SBR

Lane Configurations	↖	↑	2	4	54	82	1	269	3	73	370	10
Traffic Vol, veh/h	11	45	2	4	54	82	1	269	3	73	370	10
Future Vol, veh/h	11	45	2	4	54	82	1	269	3	73	370	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	None	-	None	-	None	-	-	None	-	None	-
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	49	2	4	59	89	1	292	3	79	402	11

Major/Minor Major1 Major2 Minor1 Minor2

Conflicting Flow All 148 0 0 51 0 0 392 230 50 334 187 104

Stage 1 - - - - - 74 74 - 112 112 -

Stage 2 - - - - - 318 156 - 222 75 -

Critical Hdwy 4.12 - - 4.12 - - 7.12 6.52 6.22 7.12 6.52 6.22

Critical Hdwy Stg 1 - - - - - 6.12 5.52 - 6.12 5.52 -

Critical Hdwy Stg 2 - - - - - 6.12 5.52 - 6.12 5.52 -

Follow-up Hdwy 2.218 - - 2.218 - - 3.518 4.018 3.318 3.518 4.018 3.318

Pot Cap-1 Maneuver 1434 - - 1555 - - 567 670 1018 620 708 951

Stage 1 - - - - - 935 833 - 893 803 -

Stage 2 - - - - - 693 769 - 780 833 -

Platoon blocked, % - - - - - -

Mov Cap-1 Maneuver 1434 - - 1555 - - 303 663 1018 402 700 951

Mov Cap-2 Maneuver - - - - - -

Stage 1 - - - - - 928 826 - 886 801 -

Stage 2 - - - - - 340 767 - 498 826 -

Approach EB WB NB SB

HCM Control Delay, s 1.4 0.2 14.8 28.2

HCM LOS B D

Minor Lane/Major Mvmt NBLn1 EBL EBT EBR WBL WBT WBR SBLn1

Capacity (veh/h) 663 1434 4 - 1555 - - 629

HCM Lane V/C Ratio 0.448 0.008 - - 0.003 - - 0.783

HCM Control Delay (s) 14.8 7.5 - - 7.3 - - 28.2

HCM Lane LOS B A - - A - - D

HCM 95th %tile Q(veh) 2.3 0 - - 0 - - 7.5

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Scenario 1 Palmerale 12:00 am 10/29/2020 Total 2023 Sat - Addendum Mitigated

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Queues

4: Scottsdale Rd & Indian Bend Rd.

11/04/2020



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	126	271	633	258	161	200	1396	437	167	1810	125
v/c Ratio	0.56	0.75	0.85	0.58	0.26	1.00	0.59	0.36	0.83	0.77	0.16
Control Delay	63.8	49.5	56.3	45.1	4.4	110.3	10.0	0.8	88.1	30.9	3.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.8	49.5	56.3	45.1	4.4	110.3	10.0	0.8	88.1	30.9	3.7
Queue Length 50th (ft)	49	75	244	178	5	85	118	0	67	416	0
Queue Length 95th (ft)	80	118	291	243	36	#166	314	0	#128	#602	34
Internal Link Dist (ft)	230		920			575			920		
Turn Bay Length (ft)			265		265	235		210	210		150
Base Capacity (vph)	686	599	828	449	609	200	2356	1205	200	2356	806
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.45	0.76	0.57	0.26	1.00	0.59	0.36	0.83	0.77	0.16

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues

6: Scottsdale Rd & 6750 North

11/04/2020



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	82	74	157	1886	2393	121
v/c Ratio	0.39	0.13	0.39	0.43	0.67	0.11
Control Delay	59.3	34.0	64.8	3.5	13.9	6.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.3	34.0	64.8	3.5	13.9	6.7
Queue Length 50th (ft)	31	23	63	142	294	19
Queue Length 95th (ft)	57	46	m90	176	465	m52
Internal Link Dist (ft)	530			305	370	
Turn Bay Length (ft)	300	50	100			150
Base Capacity (vph)	600	587	400	4412	3598	1140
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.13	0.39	0.43	0.67	0.11

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues

10: Quail Run Road & Lincoln Dr

11/04/2020

Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	284	1179	5	1280	7	10	9	163
v/c Ratio	0.65	0.39	0.02	0.51	0.01	0.10	0.12	0.52
Control Delay	11.9	2.7	7.8	10.3	0.0	2.0	61.5	6.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.9	2.7	7.8	10.3	0.0	2.0	61.5	6.8
Queue Length 50th (ft)	26	87	1	230	0	0	7	0
Queue Length 95th (ft)	96	113	7	358	0	0	26	7
Internal Link Dist (ft)	560		1280		320		320	
Turn Bay Length (ft)	100		100		100			
Base Capacity (vph)	472	2999	316	2502	1136	200	290	518
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.60	0.39	0.02	0.51	0.01	0.05	0.03	0.31

Intersection Summary

Queues

11: Scottsdale Rd & Lincoln Dr

11/04/2020

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	343	343	428	27	94	318	1528	40	1976	661
v/c Ratio	0.83	0.82	0.64	0.28	0.41	1.01	0.68	0.30	0.95	0.54
Control Delay	61.4	60.5	20.2	61.3	29.6	108.1	29.5	61.9	56.7	12.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.4	60.5	20.2	61.3	29.6	108.1	29.5	61.9	56.7	12.0
Queue Length 50th (ft)	265	265	130	21	14	-130	355	26	573	154
Queue Length 95th (ft)	#454	#451	217	51	41	#227	412	m44	#667	443
Internal Link Dist (ft)	1280					375	1240			865
Turn Bay Length (ft)	180			100			275		185	165
Base Capacity (vph)	413	417	671	177	373	314	2232	147	2076	1227
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.83	0.82	0.64	0.15	0.25	1.01	0.68	0.27	0.95	0.54

Intersection Summary

- Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues

4: Scottsdale Rd & Indian Bend Rd.

11/04/2020



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	263	436	490	336	143	320	2042	541	198	1767	203
v/c Ratio	0.73	0.82	0.65	0.71	0.24	1.87	0.97	0.49	1.16	0.84	0.28
Control Delay	63.5	56.5	47.9	50.0	8.1	438.3	33.2	3.7	167.3	36.6	9.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.5	56.5	47.9	50.0	8.1	438.3	33.2	3.7	167.3	36.6	9.5
Queue Length 50th (ft)	103	153	180	238	20	-199	475	43	-93	441	31
Queue Length 95th (ft)	143	201	244	350	52	#296	#703	107	#172	530	86
Internal Link Dist (ft)						575				920	
Turn Bay Length (ft)			265		265	235		210	210		150
Base Capacity (vph)	743	691	750	476	584	171	2101	1114	171	2101	733
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.35	0.63	0.65	0.71	0.24	1.87	0.97	0.49	1.16	0.84	0.28

Intersection Summary

- Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues

6: Scottsdale Rd & 6750 North

11/04/2020



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	173	226	174	2700	2503	47
v/c Ratio	0.58	0.47	0.30	0.65	0.80	0.05
Control Delay	60.4	36.9	54.4	9.5	28.2	12.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.4	36.9	54.4	9.5	28.2	12.8
Queue Length 50th (ft)	67	141	60	668	484	13
Queue Length 95th (ft)	102	210	m66	m717	593	m24
Internal Link Dist (ft)	550			305	370	
Turn Bay Length (ft)	300	50	100			150
Base Capacity (vph)	514	481	572	4135	3118	980
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.34	0.47	0.30	0.65	0.80	0.05

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues

10: Quail Run Road & Lincoln Dr

11/04/2020

Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	262	602	5	1017	10	10	7	270
v/c Ratio	0.54	0.20	0.01	0.39	0.01	0.10	0.07	0.74
Control Delay	6.3	2.6	6.6	7.6	0.0	2.0	55.2	18.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.3	2.6	6.6	7.6	0.0	2.0	55.2	18.3
Queue Length 50th (ft)	24	35	1	135	0	0	6	0
Queue Length 95th (ft)	63	75	6	247	0	0	21	79
Internal Link Dist (ft)	290		1550		320		320	
Turn Bay Length (ft)	100		100		100			
Base Capacity (vph)	553	2944	578	2590	1174	167	290	546
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.47	0.20	0.01	0.39	0.01	0.06	0.02	0.49

Intersection Summary

Queues

11: Scottsdale Rd & Lincoln Dr

11/04/2020

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	342	343	423	47	141	386	2178	80	2029	477
v/c Ratio	0.91	0.90	0.59	0.42	0.50	0.82	0.97	0.54	1.06	0.42
Control Delay	75.1	74.0	14.7	64.1	30.7	65.3	46.9	82.4	74.7	4.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	75.1	74.0	14.7	64.1	30.7	65.3	46.9	82.4	74.7	4.0
Queue Length 50th (ft)	274	274	109	36	24	151	-623	66	-655	82
Queue Length 95th (ft)	#525	#524	186	74	56	202	#745	m85	#746	m137
Internal Link Dist (ft)	1550					375	1240			865
Turn Bay Length (ft)	180			100			275		185	165
Base Capacity (vph)	376	380	745	221	474	543	2241	191	1906	1143
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.91	0.90	0.57	0.21	0.30	0.71	0.97	0.42	1.06	0.42

Intersection Summary

- Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues

4: Scottsdale Rd & Indian Bend Rd.

11/04/2020



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	249	444	545	328	278	318	1558	571	233	1640	212
v/c Ratio	0.68	0.84	0.78	0.77	0.52	1.89	0.75	0.52	1.39	0.79	0.29
Control Delay	53.5	48.4	47.8	50.5	20.2	452.3	30.0	10.1	244.1	30.0	8.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.5	48.4	47.8	50.5	20.2	452.3	30.0	10.1	244.1	30.0	8.5
Queue Length 50th (ft)	81	117	172	196	72	-167	324	159	-104	345	28
Queue Length 95th (ft)	118	170	#252	#351	139	#255	385	283	#182	408	78
Internal Link Dist (ft)	230		920			575			920		
Turn Bay Length (ft)			265		265	235		210	210		150
Base Capacity (vph)	605	605	695	427	538	168	2083	1089	168	2083	732
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.73	0.78	0.77	0.52	1.89	0.75	0.52	1.39	0.79	0.29

Intersection Summary

- Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues

6: Scottsdale Rd & 6750 North

11/04/2020



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	124	212	215	2299	2313	49
v/c Ratio	0.46	0.49	0.46	0.56	0.75	0.05
Control Delay	50.3	34.2	33.7	0.8	15.4	3.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.3	34.2	33.7	0.8	15.4	3.9
Queue Length 50th (ft)	40	112	76	12	340	3
Queue Length 95th (ft)	69	180	m91	20	425	m16
Internal Link Dist (ft)	550			305	370	
Turn Bay Length (ft)	300	50	100			150
Base Capacity (vph)	336	437	471	4089	3092	976
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.37	0.49	0.46	0.56	0.75	0.05

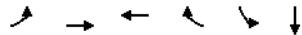
Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues

10: Quail Run Road & Lincoln Dr

11/04/2020



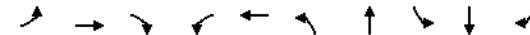
Lane Group	EBL	EBT	WBT	WBR	SBL	SBT
Lane Group Flow (vph)	349	18	26	10	8	300
v/c Ratio	0.57	0.01	0.02	0.02	0.02	0.25
Control Delay	12.4	6.1	10.9	0.0	11.0	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.4	6.1	10.9	0.0	11.0	0.5
Queue Length 50th (ft)	54	1	2	0	2	0
Queue Length 95th (ft)	101	4	8	0	8	0
Internal Link Dist (ft)	560	1280			320	
Turn Bay Length (ft)	100		150			
Base Capacity (vph)	607	1769	1179	603	470	1200
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.57	0.01	0.02	0.02	0.02	0.25

Intersection Summary

Queues

11: Scottsdale Rd & Lincoln Dr

11/04/2020



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	282	284	358	46	132	275	1868	83	1967	477
v/c Ratio	0.80	0.79	0.57	0.37	0.43	0.91	0.89	0.54	0.98	0.40
Control Delay	56.0	55.4	13.8	52.7	20.4	80.4	36.4	52.3	54.3	8.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.0	55.4	13.8	52.7	20.4	80.4	36.4	52.3	54.3	8.9
Queue Length 50th (ft)	178	180	65	29	12	93	-455	45	-432	99
Queue Length 95th (ft)	#326	#327	128	64	41	#169	#571	m67	#591	246
Internal Link Dist (ft)	1280					375	1240			865
Turn Bay Length (ft)	180			100		275		185		165
Base Capacity (vph)	359	364	628	208	454	302	2091	173	2009	1179
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.79	0.78	0.57	0.22	0.29	0.91	0.89	0.48	0.98	0.40

Intersection Summary

- Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.